

# FLIGHT

First Aero Weekly in the World.

Founder and Editor: STANLEY SPOONER.

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport.

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## Flight.

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### TO OUR READERS.

The Supply of "FLIGHT." Important Notice.

Order "FLIGHT" to be either delivered or reserved for you regularly.

As the demand for "FLIGHT" is so great each week, it is of the utmost importance that readers should place their orders *firmly* for copies of "FLIGHT" at the bookstalls, their newsagents, or direct from the publishers, at 44, St. Martin's Lane, W.C., if they wish to secure a copy every week and avoid disappointment. The stringent Government restrictions in regard to the supply of printing paper necessitates this precaution in order that only actual numbers required are printed, and all wastage by unsold copies may thereby be reduced to a minimum, if not eliminated.

THE PUBLISHERS.

### EDITORIAL COMMENT.



OUR congratulations to Mr. Pemberton-Billing, M.P., upon his *début* in the Lower House last week. That he acquitted himself well was the unanimous verdict of the members, and by his frank incisive manner and ready wit the new member went with a bound to the top in winning the attention of every section of the House. It is seldom that so much attention is given to the maiden speech of a newly elected representative of the

people as that which was accorded to Mr. Pemberton-

The Air  
at  
Westminster.

Billing. But his subject was such a live one, and the shadow of his personality had preceded him at Westminster to such effect that one and all of his fellow members were out to be more than usually critical, thereby rendering his position the more difficult. The newcomer was not, however, kept long in suspense as to his reception, and with growing confidence as he warmed to his subject, Mr. Pemberton-Billing, during his short maiden effort, created a highly favourable impression as to his being a live acquisition to Parliament, the cheers which greeted the conclusion of his speech being exceptionally earnest and spontaneous. That the message from E. Herts has already got home there is little doubt, as is evidenced by the increased activity and efficiency already displayed by the R.N.A.S. both in this country and on the other side of the water. Now our massed bombing raids have been restarted with such good results, every effort should be strained to make them as continuous as possible day by day. That the material at the disposal of the R.N.A.S. is now adequate there can be no manner of doubt, and therefore there can be no excuse for not giving the flying officers the chances of distinction which they have been fretting to obtain for the past year or more. There is great promise to this end in the extended organisation which is in process of evolution through the co-ordination Committee. The publication last week of the constitution of this Committee also inspires confidence, although we should have liked to have seen the constructional element

represented, if only in an advisory capacity. Whilst welcoming most cordially the inclusion of Lord Montagu on this body, we are not surprised at the choice by Lord Derby, who is ever sound in his selection of the right men to work with him in any organisation of national importance, such as aviation, with which he is concerned. In this appointment we see far-reaching possibilities of a momentous character. Lord Montagu's life was not spared from the "Persia" for nothing.

It was somewhat of a quaint position which emerged in the House of Lords on the Wednesday, when Lord Montagu, following up his campaign previously opened out, for the creation of an Air Minister, desired information from the Earl of Derby, as representing the Inter-Departmental Committee on Air Service, as to the functions of that body, and as to the work it had done. Before the question came to be answered in the House Lord Montagu had already been approached by the Prime Minister to become a member of the Committee, and had consented to serve the country's interest in this capacity, so that, except for the public interest which attached to the information, he might well have supplied the answer to his own query. As it was, for the first time, detailed official enlightenment as to the real scope of the Committee's powers was forthcoming. From this it would appear that the Committee will have their hands pretty full for some time, and in their policy of "avoiding clashing and overlapping," and the "securing of full and harmonious development," it would seem as if they had exceptional openings for the adjustment of delicate positions which may, and probably will, arise. It is a source of satisfaction to know officially that already they have been able to straighten out some of the anomalies existing between the two branches of work of the air service. By finding out the specific needs of one department, the Committee were able to place at the disposal of that particular branch the special kind of aircraft required, other machines of more use to the naval department being, *per contra*, in turn released for the R.N.A.S. We have evidence that this was one of the delightful rocks through which a good deal of wreckage of good intentions was brought about many months ago. Neither side would approach or work with the other, with the result that a number of machines urgently required by one service were lying idle and useless with the other Service. The language which our informant—who has since had distinctions awarded to him—used over the situation at the time was decidedly not parliamentary. But could the situation have been laid before the House at the time, the facts as detailed to us would, we think, have created a bit of a sensation with the general public. Bringing the two branches into closer and harmonious working will indeed be a great achievement in the interests of the country, and this position, through the medium of the air, we have for long foretold is likely to be brought about between the two great British Services themselves, a conclusion to be earnestly sought for. The unequivocal way in which Lord Derby was able to assure the House that he would, without abandoning his

other important work, be able to carry out the duties of Chairman should be a source of considerable relief to all wishing the Air Service development well. At the same time, we have our doubts upon this working out in practice. We hardly think even yet the vastness of the Air Service has been grasped.

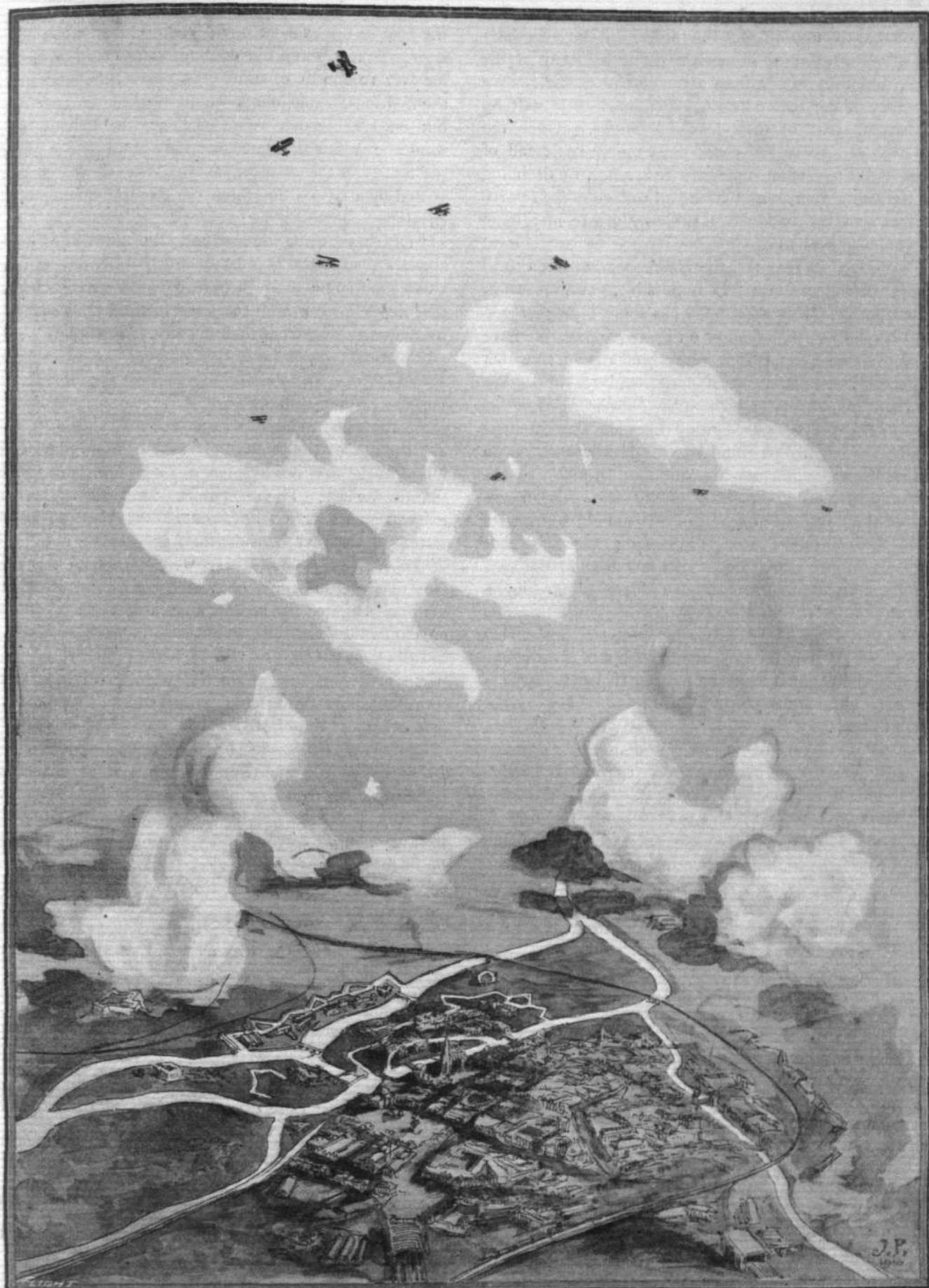
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## Dirigibles and Atmospheric Conditions.

It is a valuable indication of the growing importance of aeronautics as a science that leading technical papers, in other spheres of science, are carefully analysing the possibilities of Zeppelins, and endeavouring to demonstrate by engineering facts and figures, the directions in which possible developments are likely to incline. For instance, in an article upon the recent visit of the Zeppelins in a snowstorm, the *Engineer* points out that from the observed facts of the last Zeppelin raid three alternative conclusions may be drawn. "In the first place it may be suggested that our visitors did not fly through falling snow, but came across well above the snow clouds. In the second place," the *Engineer* says, "it may be possible that the airships were actually caught in the snow, and that for once the German meteorological service belied its reputation. We have shown previously that a layer of snow 1 in. thick spread over the top quarter of the envelope of a modern Zeppelin will account for a weight of 2,000 lbs., a figure which at the time of writing we took to be equal to the weight of explosives carried. It may be noticed in passing that the Zeppelins which visited Paris in January dropped bombs, some of which weighed 130 lbs. and some 220 lbs. We do not know how many of each kind were dropped on England last Sunday night, but if we suppose that of the ninety half were small and half large, the total weight represented comes out at 15,750 lbs. There were three airships, so that on the average each dropped a total weight of 5,250 lbs. It is reasonable therefore to suggest that the airships dropped all the bombs they carried, and that they did so because they found they were accumulating a load of snow, which was eating up their reserve buoyancy. Lightened of their load of bombs, they would be quite capable of accumulating a load of snow of equal—and even something greater—amount without having to perform their journey back under more unfavourable conditions than attended their passage across. The danger to a Zeppelin in a snowstorm lies in an encounter with it when fully loaded on the way across to England. It is not necessarily a fatal danger, for if the accumulation of snow on the envelope is not too great, the reserve buoyancy at the command of the navigator by reason of the compressed air in the ballonets inside the gas compartments, will be sufficient to accommodate the extra loading without entailing a descent to a lower level."

Supplementing the remarks of the *Engineer*, it may be pointed out that even should the fall of snow on the outward journey be so heavy that the weight of snow on the top of the Zeppelin exceeded the reserve of buoyancy provided by the ballonets, it would still be possible to continue the journey since the surplus of load imposed by the snow could—and probably would—be made up for by discharging some of the bombs. That this did indeed happen appears to be confirmed by the fact that in the first official report of the raid it was stated, it may be remembered, that bombs had been dropped in the sea without doing any damage. It would therefore seem





**AEROPLANE "STRAFING" OF METZ BY OUR FRENCH ALLIES.**—A bird's-eye view of the famous fortress from the south; in the centre, on the Moselle, and on the north, east and west hills are the ring of fortresses, the railway station being at the bottom of the picture. Most of the larger buildings in the drawing are barracks or hospitals, the whole place being a veritable city of barracks. The forts to the north and north-east, enveloped in smoke, are Fort Hindersin and Fort Manteuffel respectively.

reasonable to suppose that the raiders did not encounter any snowstorms until somewhere in the vicinity of the coast, and that rather than sacrifice any of the reserve buoyancy of the ballonets, they lightened their craft by discharging part of their load of bombs. Once the raiders had passed the coast line, the heaviest fall of snow would not entail any great risk, since, by dropping the remaining bombs and taking advantage of the reserve buoyancy of the ballonets, a sufficiently safe margin of lift would be available.

Continuing its remarks, the *Engineer* advances a third alternative suggestion. "Is it possible," continues our contemporary, "that a Zeppelin has some means of getting rid of a loading of snow on its envelope? We have heard it stated quite as if it were a well-known fact that means for this purpose are incorporated in the design and that they consist in turning the exhaust gases of the motors into special belts formed between the envelope and the gas bags. We would suggest ourselves that as an alternative or supplementary method of attaining the same end, namely, the melting of the snow, the framework of the envelope or a portion of it might be made of tubes, and through these the cooling water for the engines could be circulated. This was done in the case of some early aeroplanes, with the idea of eliminating a separate radiator. In the Zeppelin it would serve a double purpose. Aeronautical motors are not highly efficient. We may take it that of the total heat in the fuel supplied to them some 20 per cent. is carried away in the exhaust and some 50 per cent. in the cooling water. One of the earlier Zeppelins for which we have certain data consumed on the average 22 gallons of petrol per hour. The calorific value of petrol is about 135,000 B.Th.U.'s per gallon. The heat in the exhaust, therefore, carries away some 600,000 B.Th.U.'s per hour, and the heat in the cooling water some 1,500,000 B.Th.U.'s. The latent heat of ice is 142 B.Th.U.'s per lb., so that in an hour

the heat in the exhaust could reduce over 4,200 lb. of snow to water, while the cooling water could do the like for over 10,000 lb. of snow. Of course, the efficiency of the melting arrangements would not be 100 per cent., but even at 50 per cent. efficiency the exhaust alone would be sufficient to melt the snow at the rate of one ton per hour. A ton of snow, as we have shown, is represented by a layer 1 in. thick on the top quarter of the envelope.

"Of these three deductions, the third, no doubt, appeals most to the popular imagination, and it will probably soon come to be accepted as an established fact that Zeppelins can melt the snow load off their envelopes by the waste heat from their engines. That there is some arithmetical ground for this statement our investigation above shows. In other words, the heat available for the purpose is quite sufficient."

All things considered, we are inclined to think that the explanation of the snowstorm raid is more likely to be found in the first two alternative suggestions put forward than in the last. The mechanical difficulties of carrying exhaust gases or cooling water over the top of the envelope are very considerable, as pointed out in the *Engineer*, and even if these were overcome the mere fact that the snow was converted into water would not materially lighten the airship, since a film of water on the envelope, however thin, would weigh nearly as much as did the snow.

An article of this character, setting out in tangible form the difficulties of airship navigation under unfavourable weather conditions, is of the greatest value in disposing of the more or less fantastic conjectures advanced by the non-technical sections of the Press. Appearing, as it does, in a journal of the *Engineer's* standing, it carries weight, and should go a long way towards a more correct understanding of the true facts of air raiding in winter.

## THE "X" AIRCRAFT RAIDS.

### "X 23" Raid. March 19th.

*War Office, March 19th. 9.25 p.m.*

"Four German seaplanes flew over East Kent to-day.

"The first pair appeared over Dover flying at a height of 5,000 ft.-6,000 ft., one at 1.57 p.m. and the second at 2.2 p.m. The first dropped six bombs in the harbour, and then went north-west, dropping bombs on the town. The other raider, after passing over Dover, appeared over Deal at 2.13 p.m. and dropped several bombs.

"The second pair appeared over Ramsgate at 2.10 p.m. and dropped bombs on the town. One of this pair went west and the other north, pursued by a British aeroplane. One bomb is reported to have been dropped on Margate.

"The second machine appeared over Westgate at 2.20 p.m. Here several of our aeroplanes went up in pursuit. No bombs were dropped on Westgate.

"The total casualties so far reported are:—

"Killed—3 men.	Injured—17 men.
1 woman.	5 women.
5 children.	9 children.

"As far as can be ascertained, forty-eight bombs were dropped altogether. One bomb fell in the Canadian Hospital at Ramsgate, causing damage but no casualties. Material damage was done to several houses, and some artisans' cottages were wrecked.

"Flight-Commander Bone, Royal Naval Air Service, in a single-seater aeroplane, pursued one of the German seaplanes thirty miles out to sea, where, after an action lasting a quarter of an hour, he

forced it to descend. The German machine was hit many times and the observer killed."

**German Version.**

*Berlin, March 21st.*

"On Sunday a squadron of our naval aeroplanes abundantly pelted with bombs the military buildings at Dover, Deal, and Ramsgate, in spite of heavy firing by land batteries and hostile aeroplanes. Numerous hits with very good effect were observed. All our aeroplanes returned safely."

### Other Raid Gleanings.

The death roll at Dover has since been increased to five, a little girl having died from injuries received.

Over a dozen bombs were dropped at Dover; one dropped through the roof of an orphanage, but fortunately the children had been taken to the basement.

One raider on departing dropped four bombs in the sea.

A young woman cycling along the main road was blown across the road by a bomb which burst near her.

A further death at Ramsgate—a nine year old boy—makes the sixth victim, five children and a man.

The children killed were on their way to Sunday School, the man killed was driving a motor car when a bomb fell on the seat beside him.

At Deal only a hen was killed, although there were many narrow escapes.

A driver left his car and sought cover a few seconds before a bomb crashed on the seat.



# The British Air Service

"PER ARDUA AD ASTRA"

UNDER this heading are published each week the official announcements of appointments and promotions affecting the Royal Naval Air Service and the Royal Flying Corps (Military Wing) and Central Flying School. These notices are not duplicated. By way of instance, when an appointment to the Royal Naval Air Service is announced by the Admiralty it is published forthwith, but subsequently, when it appears in the LONDON GAZETTE, it is not repeated in this column.

## Royal Naval Air Service.

THE following appeared among the Admiralty announcements of the 14th inst. :—

Rene Bull granted a temporary commission as Lieutenant (R.N.V.R.), with seniority of March 13th, and appointed to "President," additional, for R.N.A.S.

The following appeared among the Admiralty announcements of the 15th inst. :—

C. R. H. Stewart and P. C. C. Passman, both entered as Probationary Flight Sub-Lieutenants (temporary), with seniority of Feb. 16th, and appointed to "President," additional for R.N.A.S., Feb. 23rd. C. R. Evershed granted a temporary commission as Sub-Lieutenant (R.N.V.R.), with seniority of March 5th, and appointed to "President," additional, for R.N.A.S.

The following appeared in a supplement to the *London Gazette* issued on the 15th inst. :—

Temporary Second Lieut. Dudley R. Baylis, Army Service Corps, relinquishes his commission on appointment to the Royal Naval Air Service. Feb. 17th, 1916.

The following appeared among the Admiralty announcements of the 17th inst. :—

Mr. H. B. Leach granted a temporary commission as Lieutenant (R.N.V.R.), with seniority of March 16th, and appointed to "President," additional, for R.N.A.S.

The following appeared among the Admiralty announcements of the 18th inst. :—

Acting Lieut.-Commander R. B. Ward, to "President," for R.N.A.S., March 17th. Flight Sub-Lieuts. T. G. Vernon promoted to Flight-Lieutenant, and B. C. Windeler (Temporary and Acting), promoted to Flight-Lieutenant (Temporary), both with seniority of Jan. 1st. The undermentioned Sub-Lieutenants have been graded as Flight Sub-Lieutenants, with seniority as follows: W. F. Horner, A. Mylne, R. A. Cochrane, R. S. Booth and G. M. Thomas, all March 17th, 1915; J. B. C. Hamilton, April 30th, 1915; T. P. Y. Moore, May 13th, 1915; P. E. Maitland, P. G. N. Ommoney, W. Underhill, C. W. C. Browne, C. B. C. Swayne, W. Y. La R. Beverley, A. H. Wann, T. W. Elmhirst, W. P. C. Chambers, I. C. Little, and J. A. Barron, all May 15th, 1915; F. L. C. Butcher and E. K. H. Turnour, both Sept. 15th, 1915. The undermentioned Acting Sub-Lieutenants have been graded as Flight Sub-Lieutenants, with seniority as follows: H. S. Scroggs and E. F. Turner, both Sept. 15th, 1915; A. L. White, Dec. 18th, 1915; H. D. Graham, D. Don, R. S. Sugden, R. S. Montagu and A. G. McEwan, all Jan. 15th. Mr. A. Frauenfelder, entered as Probationary Flight Sub-Lieutenant (Temporary), with seniority of March 17th, and appointed to "President," for R.N.A.S.

The following appeared among the Admiralty announcements of the 20th inst. :—

Captain A. J. Davies to President, additional, for R.N.A.S. (temporary); March 18th.

Temporary Lieut. (R.N.V.R.) W. H. Strettell-Miller, transferred to R.N.A.S., as Probationary Flight Sub-Lieutenant (temporary), with seniority of March 18th, and appointed to President, additional for R.N.A.S. K. D. Doyle and F. Shepherd, both granted temporary commissions as Lieutenant (R.N.V.R.), with seniority of March 18th, and appointed to President, additional, for R.N.A.S. **Royal Flying Corps (Military Wing).**

THE following appeared in the *London Gazette* of the 14th inst. :—  
*Memorandum.*—To be Temporary Second Lieutenant: Private E. B. Morgan, Reserve Batt. R.F., for duty with Royal Flying Corps. March 13th.

*Supplementary to Regular Corps.*—Second Lieutenants (on probation) confirmed in rank: G. C. Burnand, B. F. Crane, A. H. L. Beale, S. Whitechurch and F. Hitchins. To be Second Lieutenants (on probation), March 13th: J. A. Brown, H. D. Crompton, C. H. Kitchen, E. C. L. Killen and C. J. Hallward.

The following appeared in a supplement to the *London Gazette* issued on the 15th inst. :—

*Memorandum.*—Private John Blackwood, from London Regt. (T.F.), to be Temporary Second Lieutenant for duty with the R.F.C.; March 13th, 1916.

*Supplementary to Regular Corps.*—To be Second Lieutenants (on probation): Feb. 21st: John MacDougall Patten, Thomas Worswick and Henry Wing. Roger G. Cookson: Feb. 29th. Reginald Holloway; March 13th. David W. Hardy; March 16th.

The following appeared in a supplement to the *London Gazette* issued on the 16th inst. :—

*Flight-Commanders from Flying Officers (and to be Temporary Captains whilst so Employed).*—Second Lieut. G. E. H. Fincham, Special Reserve (since killed in action), and Second Lieut. W. V. Strugnell, Hampshire Regt.; Feb. 12th, 1916. Lieut. K. D. P. Murray, Special Reserve; Temporary Second Lieut. M. H. B. Nethersole, General List; Second Lieut. G. H. B. McCall, Special Reserve; March 1st, 1916.

*Flying Officers.*—Lieut. Hon. J. H. B. Rodney, Rifle Brigade (Prince Consort's Own), Special Reserve, and to be seconded; Second Lieut. F. N. Grimwade, Special Reserve; Second Lieut. E. Page, Duke of Cambridge's Own (Middlesex Regt.), and to be seconded; Second Lieut. R. J. Hudson, Royal Fusiliers (City of London Regt.), and to be seconded; Capt. K. E. Kennedy, Canadian Artillery, from a Flying Officer (Observer); Temporary Second Lieut. J. K. Summers, General List, from a Flying Officer (Observer); Feb. 29th, 1916.

*Supplementary to Regular Corps.*—Second Lieutenants (on probation) confirmed in their rank: Wilfrid H. Tolhurst, Harold J. N. Drope, Ernest Duveen and Montague V. Morgan.

The following appeared in the *London Gazette* of the 17th inst. :—

*Memoranda.*—Non-commissioned officer and men to be Temporary Second Lieutenants for duty with the R.F.C.: Pte. Percy T. Carden, from Royal Fusiliers (City of London Regt.); Feb. 4th, 1916. Corpl. Ronald Ferguson and 1st Class Air-Mechanic Rupert Cook, from R.F.C.; Feb. 20th, 1916.

To be Temporary Second Lieutenants for duty with the R.F.C.: March 1st, 1916: Bombdr. Kenneth K. Turner, from Australian Imperial Force. March 13th, 1916: Bombdr. Jack K. Grayson, from University of London O.T.C. Pte. Duncan Sinclair, from University of London O.T.C.

*Supplementary to Regular Corps.*—Second Lieutenants (on probation) confirmed in their rank: John F. Loscombe, Kenneth C. Cleaver, and Ernest B. Horlick.

To be Second Lieutenants (on probation): Feb. 21st, 1916: Leopold H. B. Cosway and Edmund Cooke. Robert M. J. Dunphy; March 6th, 1916.

The following appeared in a supplement to the *London Gazette* issued on the 18th inst. :—

*Princess Louise's (Argyll and Sutherland Highlanders).*—Second Lieutenant to be Lieutenant: Edward H. Grant; June 21st, 1915, and to be seconded for service with the Royal Flying Corps from Jan. 21st, 1916.

*Supplementary to Regular Corps.*—The Christian names of Second Lieut. Beaufoi John Warwick Montessor Moore are as now described and not as in the *Gazettes* of Sept. 8th, 1915, and Oct. 28th, 1915.

To be Second Lieutenants (on probation): Charles M. Denny and Joseph J. Bland; March 13th, 1916.

The following appeared in a supplement to the *London Gazette* issued on the 20th inst. :—

*Flight-Commander.*—Temporary Second Lieut. C. H. R. Johnstone, General List, from a Flying Officer, and to be Temporary Captain whilst so employed; March 4th, 1916.

*Flying Officers.*—March 2nd, 1916: Temporary Second Lieut. J. M. Child, Durham L.I., and to be transferred to the General List. Temporary Second Lieut. M. D. Barber, King's Own (Yorkshire L.I.), and to be transferred to the General List. Second Lieut. G. H. B. Dent, Herts Yeomanry (T.F.). Second Lieut. R. D. Bellamy, Essex Regt., and to be seconded. Temporary Second Lieut. L. O. Crowther, Queen's Own (Royal West Kent Regt.), and to be transferred to the General List. Second Lieut. Special Reserve; W. H. Tolhurst, M. V. Morgan, H. J. N. Drope.

*Flying Officers (Observers).*—Second Lieut. M. A. A. Lillis, Royal Irish Regt., from a Flying Officer; Feb. 17th, 1916; Feb. 27th, 1916. Temporary Second Lieut. C. A. Brewster-Joske, Motor Machine Gun Service, and to be transferred to the General List. Temporary Second Lieut. F. C. Butler, General List.

*Supplementary to Regular Corps.*—The notification of the appointment to a Second Lieutenancy (on probation) of Dillwyn P. Starr, which appeared in the *Gazette* of Mar. 2nd, 1916, is cancelled.

Second Lieut. (on probation) Basil M. Iles is confirmed in his rank.

To be Second Lieutenants (on probation): Frederick S. Smith; March 13th, 1916. Vernon W. B. Castle; March 15th, 1916.

## HONOURS.

### Honours for the R.N.A.S.

IN a supplement to the *London Gazette* issued on March 14th it was announced:—

The undermentioned officers have been commended for service in action in despatches received from the Vice-Admiral Commanding the Eastern Mediterranean Squadron covering operations between the time of the landing on the Gallipoli Peninsula in April, 1915, and the evacuation in December, 1915-January, 1916:

- Wing-Captain FREDERICK HUGH SYKES, R.N.A.S.
- Commander CHARLES RUMNEY SAMSON, D.S.O., R.N. (Wing-Commander R.N.A.S.).
- Commander ROBERT HAMILTON CLARK-HALL, R.N. (Wing-Commander R.N.A.S.).
- Lieutenant CECIL JOHN L'ESTRANGE-MALONE, R.N. (Squadron-Commander R.N.A.S.).
- Lieutenant RICHARD BELL DAVIES, V.C., D.S.O., R.N. (Wing-Commander R.N.A.S.).
- Flight-Commander REGINALD LENNOX GEORGE MARIN, D.S.O., R.N.A.S.
- Lieutenant CHARLES HUMPHREY KINGSMAN EDMONDS, D.S.O., R.N. (Flight-Commander R.N.A.S.).
- Flight-Commander CHARLES HENRY BUTLER, R.N.A.S.
- Flight-Lieutenant GEORGE BENTLEY DACKER, D.S.C., R.N.A.S.
- Flight-Lieutenant GORDON LINDSAY THOMSON, R.N.A.S.
- Flight-Lieutenant EDWARD HARRIS DUNNING, R.N.A.S.
- Flight-Lieutenant GILBERT FORMBY SMYLLIE, D.S.C., R.N.A.S.
- Carpenter JAMES JOHN BROWNRIDGE, R.N. (Warrant Officer, 1st Grade, R.N.A.S.).
- Lieutenant L. H. STRAIN, R.N.V.R.
- Lieutenant WILLIAM PARK, R.N.V.R.
- Midshipman JOHN EDMUND SISSMORE, R.N. (now Acting Sub-Lieutenant).
- Midshipman JOHN DYSON CHAPPLE, R.N. (now Acting Sub-Lieutenant).
- Midshipman E. K. H. ST. AUBYN, R.N.

It was also announced that the King had been graciously pleased to give directions for the following appointment to the Most Distinguished Order of Saint Michael and Saint George. Dated January 1st, 1916:

To be Additional Member of the Third Class, or Companion, of the said Most Distinguished Order:

Wing-Captain FREDERICK HUGH SYKES, R.N.A.S.

The King has further been graciously pleased to approve of the award of the Distinguished Service Cross to the undermentioned officers:

- Flight-Commander CHARLES HENRY BUTLER, R.N.A.S.
- Flight-Lieutenant GORDON LINDSAY THOMSON, R.N.A.S.

These two pilots have carried out photographic work, on many occasions flying at low altitudes over the enemy's lines to get good results.

Flight-Lieutenant EDWIN HARRIS DUNNING, R.N.A.S.

Has performed exceptionally good work as a seaplane flyer, making many long flights both for spotting and photographing.

Lieutenant L. H. STRAIN, R.N.V.R.

Has performed consistent good work as observer since February, 1915.

Lieutenant WILLIAM PARK, R.N.V.R.

Has proved one of the most valuable spotting officers, and has frequently performed most useful service.

Acting Sub-Lieutenant JOHN EDMUND SISSMORE, R.N.

Acting Sub-Lieutenant JOHN DYSON CHAPPLE, R.N.

Midshipman ERSKINE KNOLLYS HEVENINGHAM ST. AUBYN, R.N.

Have been continuously employed as observation officers in aircraft since April, and performed most valuable services.

### More Rewards for R.F.C.

IN a supplement to the *London Gazette* issued on the 15th inst. it was announced that the King had been graciously pleased to confer the Military Cross on the undermentioned officer in recognition of his gallantry and devotion to duty in the field:—

Lieutenant (Temporary Captain) EUSTACE OSBORNE GRENFELL, R.A. and R.F.C.

For conspicuous gallantry and skill. He attacked single-handed and brought down three Fokker aeroplanes. Captain Grenfell has shown great bravery and initiative at all times.

In the long list of awards of the Distinguished Conduct Medal the following appeared:—

2341 Corporal C. H. NOTT, No. 15 Squadron R.F.C.

For conspicuous gallantry on escort duty when acting as gunner. During an attack in the air he was hit in the eye and rendered unconscious, the machine being also considerably shot about, and the engine damaged. On recovering consciousness, he at once made use of his gun with such good effect that he drove off the enemy's aeroplane, which had pressed the attack. Without his fine pluck it is almost certain that the machine and personnel would have been lost. This gallant N.C.O. is likely to lose his eye.

### French Honours for Flying Officers.

IT was announced in the *London Gazette* of the 21st inst. that the King has been pleased to grant the undermentioned gentlemen His Majesty's Royal licence and authority to wear decorations conferred upon them by the President of the French Republic in recognition of valuable services rendered by them:—

#### Officer of the Legion of Honour.

Major and Brevet Lieutenant-Colonel (Temporary Brigadier-General) WILLIAM SEFTON BRANCKER, R.A.

#### Chevalier of the Legion of Honour.

Engineer Lieutenant-Commander CHARLES RUSSELL JEKYL RANDALL, R.N. (Wing-Commander in Royal Naval Air Service); and

Flight-Commander (Acting Squadron-Commander) HARRY DELACOMBE, R.N.A.S.

## THE APTITUDE OF AVIATORS.

A DESCRIPTION of a method which has been devised in France for physically testing those who desire to become pilots of aeroplanes is given by the Paris correspondent of the *Lancet* as follows:—

"Some French observers have worked out a method of detailed physiological examination applicable to beginners in aviation, which has already met with high approval. In order to test the degree of self-control and of endurance the would-be pilot must begin by exerting with both hands a rhythmic and continued effort, which is inscribed on the tambour of an apparatus and automatically added up in kilos by a meter. He is then placed in front of a needle moved by clockwork one complete turn in a second. Immediately the subject is aware of any deflection of the needle he must arrest it by pressing on a lever. Finally, a tambour is applied to his thorax or to the pulse in order to gauge his respiratory and circulatory rhythm. He is then submitted to a violent and unexpected sensation, visual or tactile—a magnesium flash, a detonation, or a douche of ice-cold water. A rigid self-control may ensure no apparent emotion from the subject, but the tambour of Marec mercilessly registers the tremor of his hand, the acceleration of his respiration, the beating of his heart—in short, the organic impression. The organism thus betrays itself by the degree of its reflexes and in a manner more or less the persistence of its sensory response. A pilot should remain imperturbable not only morally but physiologically. In spite of

fatigue, in spite of danger, his system must remain prepared to respond at once not only to the call of his will but to the reflexes acquired during his education and training. Like his machine, he must be a supple and unfailing organism. From the moment when his flight begins he must constantly adjust his apparatus to the three dimensions of space. If he misses the moment at which any inclination begins the necessary effort will become greater, because the acquired inclination will have had time to become more pronounced. Fatigue will also tend to increase, and to bring with it a muscular weakness which renders slower the production of the reflex. These two drawbacks form a vicious circle, and the moment will ultimately come in which the apparatus leans beyond the possibility of return.

To sum up, what is essential for a good pilot is a combination in one person of resistance to fatigue, emotional passivity, and very rapid motor reaction, and these factors should be registered with precision in any tests to which the candidate is submitted. There is in this physiological examination, conducted in the way suggested above, more than an ingenious adaptation of medical knowledge to the needs of a special corps. The method offers guarantees for the individual and for the army as a whole, and if its employment becomes general may effect a real economy of men and material."

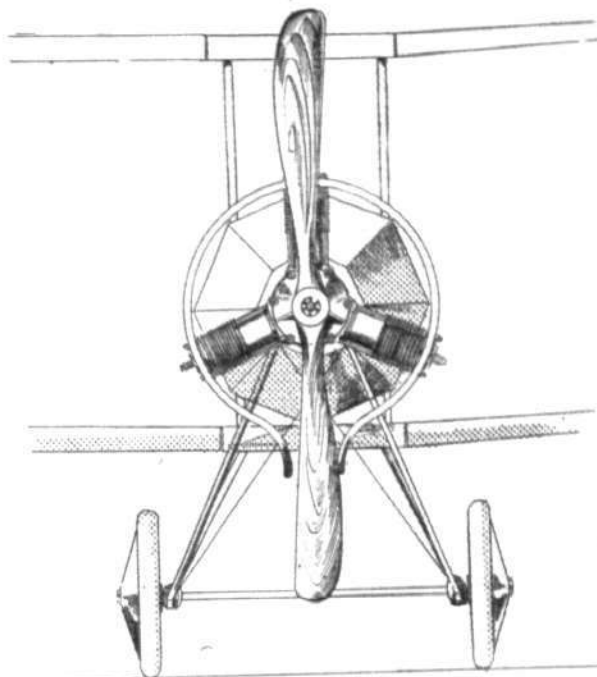
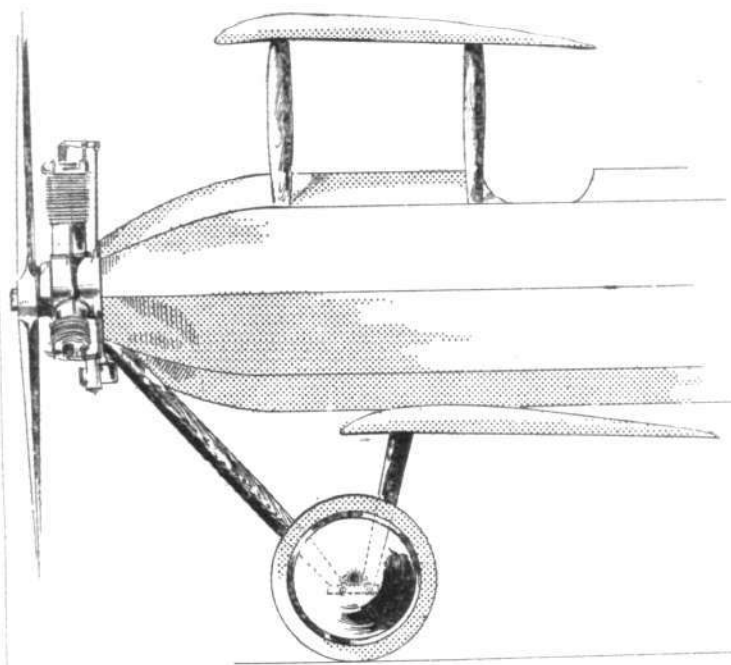


# A "POPULAR" TYPE AEROPLANE DESIGN.

By C. M. POULSEN.  
(Continued from page 217.)

IN our last issue the general construction of the tail planes was dealt with, and it now remains to deal with the type of chassis to employ, and the controls. With regard to the chassis, the "Vee" type is to be preferred for

through the member and struts, forming a very strong joint. The wood member is cut to the shape shown, the bottom of it being rounded off so as not to cut the rubber cord shock absorbers. The tubular axle rests in



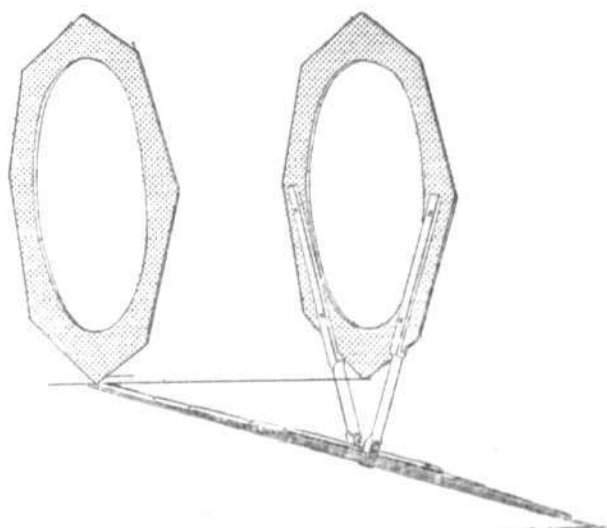
"Flight" Copyright.

Front and side elevation of the undercarriage.

a small light machine like the "Popular," partly because it is simple to make, and partly because it is very strong and offers a minimum of head resistance. Originally, it may be remembered, it was intended to take the rear chassis struts to the rear spar of the lower plane, but since this would give a very flat angle to the struts, it will probably be better to choose the front spar of the bottom plane for the attachment of the rear struts. This arrangement is shown in some of the accompanying sketches. The front chassis struts are secured at the top to the *longerons* and engine plate in the manner shown in the perspective sketches. At its upper end the front strut is cut on the slope so as to rest against the part of the engine plate that is bent back and around the *longeron*. On each side of the strut is a plate having holes cut in it corresponding with those of the bent back portions of the engine plate. An ear on the cheek plate is bent at right angles to the plate, and has in it a hole corresponding with a hole in the engine plate proper. Longitudinal bolts secure these ears to the engine plate, while the two bolts that pass inside the *longeron* serve the double purpose of securing the engine plate and the strut cheek plates to the *longerons*. The sketches, which show the joint "taken down," will probably make the arrangement clear.

The method of joining the chassis struts at their lower ends is illustrated in another sketch. A short longitudinal member, which but for its shortness one might term a skid, connects the front and rear chassis struts. On each side of this member is a sheet steel plate bolted

the notch cut in the top of the wood member, from which it is slung by wrapping the rubber cord around the axle and the member. To prevent the shock-absorbing device from shifting a spool-shaped sleeve like the one shown in the sketch is usually employed.



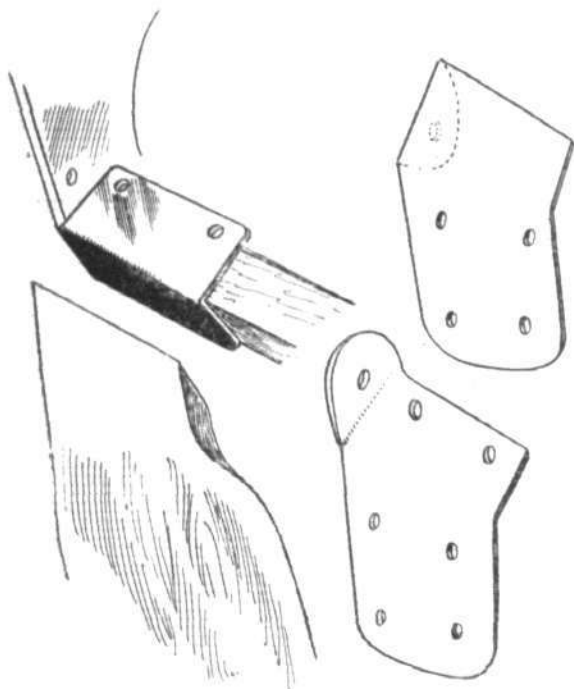
"Flight" Copyright

Method of supporting the laminated wood tail skid.

Two transverse struts, one in front of the axle and one behind it, connect the apices of the two "Vees" of the chassis, and serve, of course, to give rigidity laterally to

the undercarriage. By suitably designing them they can, however, be made to perform yet another duty, that of streamlining the axle. Near the ends where they abut against the wood member these struts fit into an opening cut in the inner cheek plate at the lower end of the strut. In order to further prevent the horizontal struts from shifting, they are secured by an angle plate to the struts of the undercarriage. This angle plate is extended upwards, and the extension provided with a hole for the diagonal bracing wire of the chassis. Sufficiently far inwards to clear the spool-shaped sleeve referred to above, the horizontal strut is shaped to a section resembling the front half of an ordinary streamline strut, while the horizontal strut behind the axle is shaped to a section similar to the rear portion of a strut—that is to say, machined to a sharp edge. By having the axle resting, when the machine is in the air, between these two transverse struts, the whole will form a fairly good streamline, and therefore offer no great head resistance.

While on the subject of undercarriage, the question of tail skid will have to be considered. Since it is a little difficult to fit a tail skid of the ordinary type to the octagonal formers, I suggest using instead a skid made up of several laminations of wood, and to support it on two struts secured to former No. X (see side view of body published on page 57 of our issue of January 20th). The method I suggest for attaching the two struts to this former is similar to that employed for the inner plane struts. The two struts are of rectan-



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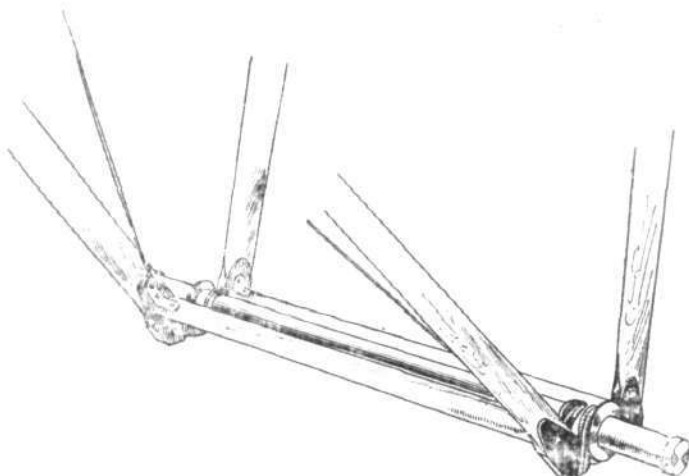
Attachment of front chassis struts to engine plate and longeron.

gular section for the portion of them that is inside the body, and are sawn through transversely to accommodate the three-ply former, to which they are secured by bolts. The part of the tail skid struts that projects

## The British Rigid Airship.

REPLYING to Mr. Brookes in the House of Commons on March 15th, Dr. Macnamara stated that the rigid airship which was under construction for the Admiralty at the beginning of the war was now being completed.

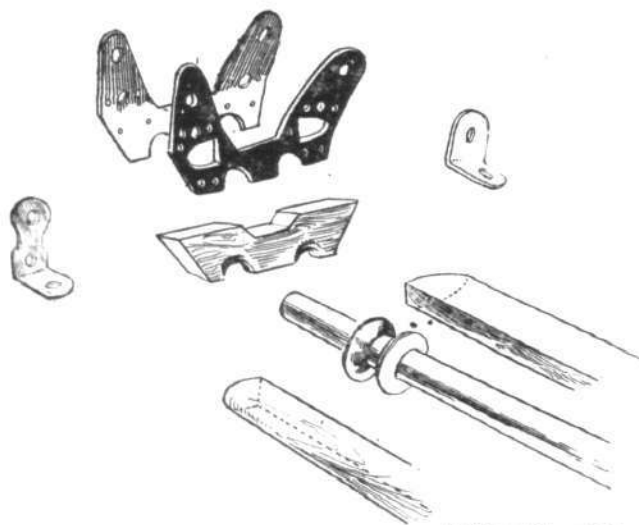
outside the covering of the body is shaped to a good streamline section. By suitably arranging the angle at which these two tail skid struts converge, they can be made to meet a short distance below the lower vertical fin of the tail planes. An inspection of the sketch



"Flight" Copyright.

Perspective sketch of lower part of undercarriage.

dealing with the tail skid will, I think, explain the arrangement, which is easily made and should prove satisfactory in practice. At the front the laminated skid is attached to former No. IX by means of a steel clip, thereby preventing any tendency of the skid struts to fold or bend backwards under a severe shock. Should at any time the tail come down hard enough to bend the tail skid until it meets the rudder, the skid will have



"Flight" Copyright.

Analytical sketch of attachment of vertical and horizontal chassis struts to the short skids.

absorbed the greater part of the shock, which will be nearly spent by the time the rudder reaches the ground, and there should, therefore, be little or no danger of damage to the rudder or bottom fin.

(To be concluded.)

## The New French Minister of War.

THE appointment of General Roques to succeed General Gallieni as French Minister of War should mean much for the French air service, as it will be recalled that General Roques was Inspector-General of Military Aeronautics in France until 1912.



# The Royal Aero Club of the United Kingdom

OFFICIAL NOTICES TO MEMBERS

## Committee Election.

THE following Members have been nominated:—

Lieut.-Col. R. K. Bagnall-Wild, R.E.  
Lieut.-Col. W. D. Beatty, R.E.  
G. B. Cockburn.  
Lieut.-Col. F. Lindsay Lloyd.  
Capt. J. T. C. Moore-Brabazon, R.F.C.  
Com. C. R. Samson, R.N., D.S.O.  
A. Mortimer Singer.  
T. O. M. Sopwith.

The Marquess of Tullibardine, M.V.O., D.S.O., M.P.

The number of candidates not exceeding the number of vacancies, no ballot paper has been sent to the Members.

## Annual General Meeting.

The Annual General Meeting of the Members of the Royal Aero Club of the United Kingdom will be held at 166, Piccadilly, London, W., on Tuesday, March 28th, 1916, at 6 o'clock.

## AGENDA.

1. To elect Vice-President and Council for the ensuing year.
2. To announce Committee election.
3. To approve and confirm the revised Rules of the Club.

## SPECIAL COMMITTEE MEETING.

A Special Meeting of The Committee was held on Tuesday, the 21st inst., when there were present:—Prof. A. K. Huntington, in the Chair, Mr. Griffith Brewer, Mr. Ernest C. Bucknall, Squadron-Commander F. K. McClean, R.N., Flight-Commander C. F. Pollock, R.N. and the Assistant Secretary.

Election of Members.—The following New Members were elected:—

Flight Sub-Lieut. Stanley Bell, R.N.  
Flight-Com. Charles Henry Butler, R.N.  
Vernon Blyth Castle.  
Capt. Claude Grenville Sheppard Gould, R.F.C.  
Lieut. Ivor Thomas Lloyd (South Wales Borderers) (attached R.F.C.).

Noel van Raalte.

Lieut. Bernard Harold Sisson, R.F.C.

Lieut. Charles Arthur Slater, R.N.V.R.

Britannia Challenge Trophy (presented by Capt. H. Barber, R.F.C.).—It was decided not to make an award for the present for the year 1915.

## Extension of the Hours of Opening the Club.

The Club is now open from 9 a.m. to 10.30 p.m. each day, including Sunday.

## THE FLYING SERVICES FUND

administered by

## THE ROYAL AERO CLUB.

THE Flying Services Fund has been instituted by the Royal Aero Club for the benefit of officers and men of the Royal Naval Air Service and the Royal Flying Corps who are incapacitated on active service, and for the widows and dependants of those who are killed.

The Fund is intended for the benefit of all ranks, but especially for petty officers, non-commissioned officers, and men.

Forms of application for assistance can be obtained from the Royal Aero Club, 166, Piccadilly, London, W.

## Subscriptions.

Total subscriptions received to March 14th, 1916	10,590	19	9
Collected at the Westland Aircraft Works, Yeovil (Twenty-fifth contribution) ...	...	0	8 6

Total, March 22nd, 1916 ...	...	10,591	8 3
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B. STEVENSON, Assistant Secretary.

166, Piccadilly, W.



London Aerodrome, Collindale Avenue, Hendon.

Grahame-White School (R.N.A.S.).—Straights with instructor last week: Probationary Flight Sub-Lieuts. Dobald, Griffin, and McHardy. Circuits with instructor: Probationary Flight Sub-Lieut. Melhado.

Brevets during week: Probationary Flight Sub-Lieuts. Carr, Gibbs, How, Powles, and West. Test A and B: Wigglesworth.

Grahame-White Civilian School.—Straights with instructor: Messrs. Baragar, Box, Hathaway, Hillaby, Holman, Rigby, Sandys, Sloden, Spencer, Stapley, Tanner, Timmis, Williams F., Williams S., Nadin, and Smith. Circuits and eights with instructor: Messrs. Butler, Eichelbrenner, Franck, Grasset, Phillipi, Walk, and Leigh.

Instructors during week: Messrs. Biard, Hale, Manton, Pashley, Russell and Winter.

Grahame-White biplane in use.

Beatty School.—The following pupils were out during last week: Messrs. Wainwright, FitzHerbert, Young, Drysdale, Edwards, Brand, Lewis, d'Allesina, le Champion, Monhom, Chang, Fong, Barrow, Branford, Mossop, Podmore, Sellars, Hungwan, Roberts, Knox, Phillips, Tjaarda, Brewerton, Stanley, Ching Tow, and Earl Skeet.

The instructors were Messrs. G. W. Beatty, R. Kenworthy, W. Roche-Kelly, G. Virgilio, A. E. Mitchell, L. L. King, and H. Fawcett; the machines in use being Beatty-Wright dual-control and single-seater propeller biplanes, Caudron dual-control and single-seater tractor biplanes.

Certificates were taken by Messrs. Young, Wainwright, and FitzHerbert.

Hall School.—The following pupils were out receiving instruction during last week:—

With Instructor Smith: Messrs. Duncan, Collier, Dickson, Rayne, Mahoney, Glegg, Gudger, Le Grice,

Halliday and Rand. With Instructor Smith (for A. Chave, indisposed): Messrs. Rochford, Smith, Longton, Cosgrave, Neal, Millburn, Chapman, Bennett and Roberts. With Cecil M. Hill: Messrs. Ormerod, Arnsby, Collins, Lieut. Cooke, Dodd, Thom, Cook and Wooley.

Hall and Caudron high-power tractor machines in use.

Royal Aero Club certificate taken in excellent style by Gerald Smith.

*Note.*—The Hall School have an opening for a good qualified instructor.

**Ruffy-Baumann School.**—Pupils with instructor last week: Winter, Edgar, Hoskyns, Dobson, Torres, Maya, Portela, Westlake, Cuthbertson, Williams, and Williams. Doing straights or rolling alone: Cox, D'Opstael, Wood, and Muspratt. Eights or circuits: D'Opstael.

Instructors: Edouard Baumann, Felix Ruffy, Ami Baumann, Clarence Winchester, and Andre Thomsen.

50 and 60 h.p. Ruffy-Baumann tractor biplanes in use.

**London and Provincial Aviation Co.**—Pupils doing rolling last week: Messrs. Quayle, Jennings, Creaghan, Aldous, Dawson, Rimer and Ferris. Doing straights:

Messrs. Brown, Moore, Archer, Hay, de Goussencourt and Vilain XIII. Circuits and eights: Messrs. Clement and Scott.

Instructors: Messrs. W. T. Warren, M. G. Smiles, H. Sykes, C. M. Jacques and W. T. Warren, jun.

Royal Aero Club certificates were taken by Messrs. Carleton, M. Clement and W. A. Scott.

## Bournemouth School.

Pupils doing rolling last week: Messrs. G. Mouton, O. Wilson, Morris, Adamson, and Kennedy. Straights alone: Messrs. Smith, J. Wilson, Morley, and W. Mouton. Half circuits alone: Messrs. Simpson, Dubois, Meeus, and Devos. Figures of eight and circuits: Bonnevie.

Instructors: Messrs. F. King, J. G. Woodley, and S. Summerfield. Three Caudrons in use.

The weather during the week was very favourable, and a good deal of school work was put in. F. King, J. G. Woodley, and S. Summerfield gave several exhibition flights, and two passengers were carried.

On Friday and Saturday two Service machines visited the aerodrome, and gave an interesting exhibition.



## THE ROLL OF HONOUR.

THE Secretary of the Admiralty has announced the following casualties:—

Under date March 17th:

### Killed.

Flight-Lieutenant Colin Johnson, R.N.

Second Lieutenant Edward A. Abigail, R.M., R.M.A., Anti-Aircraft Brig.

### Seriously Wounded.

Flight Sub-Lieutenant Henry K. Thorold, R.N.

The following casualties in the Expeditionary Force have been reported from General Headquarters to the War Office:—

Under date March 7th:

### Wounded.

2nd Class Air-Mechanic W. Williamson.

Under date March 9th:

### Killed.

Second Lieutenant G. E. H. Fincham, Royal Flying Corps.  
Second Lieutenant G. Price, Royal Flying Corps.

### Wounded.

Captain Hon. L. J. E. Twisleton-Wykeham-Fiennes, Oxford and Bucks L.I., 4th Batt. (T.F.), and R.F.C.  
Second Lieutenant H. D. W. Wilson, Royal Flying Corps.

### Missing.

Second Lieutenant R. P. Turner, Royal Flying Corps.

Under date March 10th:

### Missing.

Second Lieutenant D. B. Gayford, R. W. Surrey Regt., 3rd Batt., attached R.F.C.  
Second Lieutenant L. R. Heywood, R.E. and R.F.C.

Under date March 12th:

### Wounded.

Captain R. Egerton, R. Irish Fus. and R.F.C.  
Lieutenant F. W. H. Lerwill, Royal Flying Corps.  
Sub-Lieutenant M. G. P. Phillips, S. Lancs Regt. and R.F.C.



## New Offices for Air Services.

In commandeering Carter's Hotel in Albemarle Street for office accommodation for the Air Services, the Government have

Under date March 14th:

### Killed.

Captain R. A. Saunders, R.F.A., 7th London Brig. (T.F.), and R.F.C.

### Missing.

Major V. A. Barrington-Kennett, Royal Flying Corps.  
Second Lieutenant B. E. Glover, Royal Flying Corps.  
Lieutenant G. D. G. Grune, R.F.A., 4th Home Counties (Howitzer) Brig. (T.F.) and R.F.C.  
Second Lieutenant M. A. J. Orde, Royal Flying Corps.

Under date March 15th:

### Missing.

Second Lieutenant J. C. Cunningham, Royal Flying Corps.  
Lieutenant D. P. B. Taylor, 3rd Hussars and Royal Flying Corps.

Undated:

Previously reported Missing, now reported Wounded and Prisoner of War.

Second Lieutenant E. H. E. J. Alexander, King's Own (Yorks L.I.) and R.F.C.

Previously reported Missing, now reported Prisoner of War.

Second Lieutenant H. F. Champion, Rifle Brigade, 6th Batt., and R.F.C.

The following is reported from the Mediterranean:—

Previously reported Missing, believed Killed, now reported Killed.

Second Lieutenant H. M. C. Ledger, Indian Army Reserve of Officers, attached French Seaplane Flight.

The following casualties are reported from Mesopotamia:

Under date March 11th:

Wounded, since reported Died of Wounds.

Captain C. A. G. L. H. Fairie, 1st Highland L.I. and R.F.C.

### Wounded.

A. M. Rayment, Australian Flying Corps.



taken over another of London's famous hotels. Although it is not large, Carter's was patronised by distinguished county people, and had a history dating back over forty years.





## ARMCHAIR REFLECTIONS



By THE

"DREAMER."

### The Problematical Future of the Civilian School.

THESE are days of upheaval, when the passing of the Military Service Act is causing disorganisation of businesses of every description, which, calmly proceeding on peacetime lines, have been rudely awakened to the necessity of considering not only their present position but that of the future, and in this connection one is constrained to speculate on the civilian schools of aviation.

In a country where military service is part and parcel of every man's life, such a calling to the Colours as is necessitated by a war of the magnitude of that now raging, must cause terrific disruption of business. What then must it be in a country like England, catching us, as we must admit, all unexpected and unprepared?

Placing the State before the individual, as must ever be, we prepare for the worst. If, however, by the worst be only meant that which is most startling, we also prepare not to be startled, and I, individually, hold an optimistic view of the future, not without a knowledge that prosperity will be achieved under greatly altered conditions. For this war is going to alter many things, and nothing more so than aviation. Nothing will be exactly the same after the war as it was before, and everybody will readily realise that aviation, from the very tenderness of its years, and the fact that this is its first war, wherein it has proved itself of the utmost importance and utility, will change more than any other thing, especially in its methods of production of pilots and machines.

The first thought is the immediate future—or rather present—of civilian schools, seeing that some of the proprietors, and nearly all the instructors and mechanics are liable for military service. I think there is no need to greatly worry about this. The Flying Services undoubtedly want all the pilots that can be trained, and it is inconceivable that the authorities will deliberately close a most valuable source of supply by taking experienced teachers and their necessary helpers from the schools, merely to use them as trench-fighters; it would be a criminal waste of valuable material. At the same time, I can quite see the possibility that schools cannot continue quite on the same footing as in the past. Just what will happen it is hard to foretell—perhaps one of two things. Either the schools will be taken over by the Government for the duration of the war, retaining the proprietors, instructors and mechanics, who will become Government servants *pro tem.*, to coach men for the Flying Services under some definite understanding with regard to reimbursement; or, what would be far more satisfactory and beneficial, the schools will be allowed to continue, and their staff exempted from military service on the understanding that they train men for the Services only, the Government paying a set fee for each pupil. Indeed, it is difficult to see where other than embryo Service pilots will come from, in that all men of military age, whether married or single, will in all probability in the near future come under the Act.

And after the war, will the civilian schools return to their pre-war position? I think not, because the conditions will be so greatly altered in every respect that a fresh

standpoint will have to be taken. I have my own ideas on this matter, formulated by trying to look ahead. And although these ideas may be more or less wrong, and more or less right, I put them forward for what they are worth as an attempt to see into the future. I claim no second sight, for I have none, or anything to go upon but supposition based upon what I conceive to be the indications of coming events.

Service aviation of the future will be second in size and importance only to the Navy. Of that there cannot be the slightest doubt. Shall we guess at the number of pilots required, and say in round numbers anything from 10,000 to 100,000? How will these pilots be obtained, where will they be trained, and from what class of society will they come?

In all probability the dirigible will play a greater part in our aerial service than has been the case in the past, and for the pilotage of these vessels I think men of the class now piloting our aeroplanes will be chosen: that is to say, airship pilots will be commissioned officers. But I think, as pointed out in "FLIGHT" some months ago, the time is rapidly drawing near when, with the exception of piloting the single-seater scout for reconnaissance purposes, it will not be expedient to use such valuable material for such a purpose as controlling an aeroplane, which will be delegated to those of lower rank, probably rising only to the dignity of Flight Sergeant. For the larger military aeroplane of the future will be considered simply as a means of transport, which with its pilot will be ever ready to conduct officers to required destinations, either for purposes of observation, or attack. It is obviously absurd that such a high and valuable official as a Captain, or greater, should be used simply as the driver of an aeroplane, which will in time, and in a short time too, be classified and rank as requiring little more skill than expert motor car driving. Even so, the training of 10,000 aeroplane pilots only will be a work of such magnitude that Government will not be able to rely on the few schools of their own which they have at present, backed up by the few civilian schools existing to-day. There will undoubtedly be the demand, and the supply will have to be arranged for by the establishment of military training grounds on a large scale, where scores, perhaps hundreds of pupils can be accommodated and trained at one time.

The few pilots able to be taken in hand by the civilian schools will be comparatively such a negligible quantity that Government may hardly take it into their calculations.

I do not think that civilian schools will not be wanted after the war. I have no fear that civilian flying is going to be ousted altogether by military flying, any more than yachting became a finished pleasure when we started to build dreadnoughts. Aviation is going to be such a big affair that we may easily fail to grasp its significance at the moment. Flying for pleasure and commerce will stride side by side with flying of the Service order, and an industry on the private side arise from the ashes of the past of a magnitude at the moment almost beyond the dreams of the most optimistic.

It may be that the proprietors of civilian schools, even if their schools are commandeered by the Government for the duration of the war, may find themselves in no worse position financially than they are at present. Just what they will do afterwards is a matter for their own decision, but I do not see any cause for anxiety. Aviation is going to be a vastly different thing to what it has been in the past, but though it stand on a different footing, there will be prosperity in it for everybody, which is, unfortunately, more than can be said for it in the past.

Why doubting Thomases should arise now, who look

upon the future with pessimistic eyes after hanging on by the counterfoil of their cheque book through all those years of trouble and doubt, is beyond me. The sun of prosperity in aviation is rising well above the horizon, yet rather than see it and rejoice, they turn their backs eastward and say "I can't see it." I won't recount the story of Nelson and his telescope, because I don't know whether it be true, but this I know is true, that aviation, after drifting about on the swirl of uncertainty, being thrust this way, and drawn that, to an end of which none could tell, has now come into its own, and is going to be a gigantic business.



## PERSONALS.

*UNDER the above heading will be published weekly particulars of a personal character relating to those who have fallen or have been wounded in the country's service, announcements of marriages and other items concerning members of the Flying Services and others well known in the world of aviation. We shall be pleased to receive for publication properly authenticated particulars suitable for this column.*

### Casualties.

Lieutenant ARTHUR RICHARD HOWE BROWNE, R.F.C., only son of the late Arthur R. Browne and Mrs. B. H. Wilbraham, and grandson of Lord Richard Howe Browne, who previously was reported missing, is now reported killed in action in France on December 5th last.

Second Lieutenant GEORGE HEYGATE FINCHAM, 6th Squadron, R.F.C., who was killed in France on March 9th. He was the second and only surviving son of the late Lieutenant-Colonel G. H. Fincham, A.O.D., and the late Mrs. W. F. Jameson. He was aged 25, and was educated at the College of the Sacred Heart, Wimbledon. At the outbreak of war he was engaged with much success on engineering work in Southern India. He returned to England and applied for a commission in the R.F.C., and very quickly obtaining his pilot's certificate, he was gazetted as a pilot in June, 1915. He flew over to join his squadron in France in August, 1915, and in February of this year was promoted Flight-Commander and posted as Captain, though up to the time of his death he had not appeared as such in the *Gazette*. During this period he had many successful encounters with hostile aeroplanes, and on one occasion successfully repelled and outmanoeuvred an attack by five hostile machines. He met with his death during an engagement with a hostile machine while on an observation flight over the enemy lines, when, his observer having been killed, he was himself severely wounded, and, losing consciousness, his machine fell in the British lines. He was a most skilled and intrepid pilot.

Flight-Lieutenant REGINALD ARTHUR SAUNDERS, 7th London Brigade R.F.A. (T.F.), attached R.F.C., whose death has just been announced after a successful encounter in the air in France on March 14th, was the second son of Mr. Arthur Saunders, Principal Clerk in the Town Clerk's office at the Guildhall of the City of London. Major Pretymann, head of his squadron, in writing to his father to say that his death was a great loss, described him as one of the bravest of the Flight-Commanders. The young officer, who was 22 years old, had won several important distinctions for his previous exploits.

Lieutenant CYRIL WYNWARD BATTYE, R.F.C., who was accidentally killed on March 13th whilst flying, was the only son of Lieutenant-Colonel and Mrs. Battye, of Windsor. He was aged 21.

Captain CLAUD ALLAN GILBERT LINDSAY HAMILTON FARIE, 1st Highland Light Infantry and R.F.C., died on March 15th of wounds received in Mesopotamia on March 8th, aged 29 years. He was the younger and only surviving son of the late Robert Farie, of Dunmore, Victoria, and the late Mrs. Farie, formerly of Ruthven, 29, The Boltons, S.W., and grandson of the late James Farie, of Farne, Lanarkshire. He was gazetted to the Highland Light Infantry in May, 1907, and was appointed to the Royal Flying Corps in June, 1914.

Lieutenant GRAHAM PRICE, of the R.F.C., whose death was announced last week, was killed while engaged in a duel with a German aeroplane at a height of 8,000 ft. The Major of his squadron, writing to his parents with regard to the fight, said that it was "a plucky fight against odds." Lieutenant Price had created a record for his squadron with 15 fights in the air. Shortly before his death he wrote to his parents:—"If anything happens to me, do not grieve, but feel thankful that you had a son to give to the country."

### Wounded.

Captain the Hon. LAURENCE JOHN EVELYN TWISLETON, WYKEHAM-FIENNES, 4th Oxfordshire and Buckinghamshire Light Infantry (T.F.) and R.F.C., has been wounded with the B.E.F. in the North of France. He is the third son of Lord and Lady Saye and Sele, and was born in 1890. Shortly after war broke out he got a captain's commission in the first-mentioned regiment, and he has been a flight commander in the military wing of the R.F.C. since last November.

### Items.

Flight-Commander REGINALD JOHN BONE, R.N., who brought down the raiding seaplane on Sunday last, entered the Navy as a cadet in January, 1905, and after serving in the armoured cruisers "Donegal" and "Devonshire," was promoted to a Sub-Lieutenancy eight years ago. His first appointment in this rank was to the Destroyer "Foam," and in 1910 he was gazetted to the "Thames," a depot ship for submarines. Three years ago, with Admiralty permission, he took up flying and obtained his pilot certificate at Eastbourne, on Eastbourne Aviation Company's biplane, on August 16th, 1913, and was immediately afterwards drafted to the Central Flying School at Upavon for instruction in naval and military aerobatics. After three months he was sent as a Flying Officer to the Naval Air Station at Yarmouth, and on the creation of the Royal Naval Air Service in July, 1914, was gazetted a Flight Lieutenant. He remained at Yarmouth until early last year, when he was transferred to No. 4 Wing of the Royal Naval Air Service stationed at Dover. He was promoted Flight-Commander on February 23rd last, and ranks in the Navy as a Lieutenant, with seniority of December 31st, 1910. He is keen on hockey and football. He is 27 years of age and unmarried.

Lieutenant-Colonel SYKES, 15th King's Hussars, who was recommended for the Companionship of St. Michael and St. George by the Admiral in Command of the Naval Forces in the Mediterranean, joined the Flying Corps in its early stages, and was in supreme command at several manoeuvres. He fought as a trooper in South Africa, and subsequently served in the 15th Hussars and on the Staff. He has been at the front throughout this war.

Flight-Lieutenant GORDON L. THOMPSON, R.N.A.S., has been awarded the Distinguished Service Cross for carrying out photographic work at low altitudes over the enemy lines in Gallipoli. As a Trinity Hall man, he was in the famous Cambridge rowing crew, and was an international oarsman. He is well known as a member of the Leander and Thames Rowing Clubs. He was formerly an officer of the 24th London Regiment, but transferred to the R.N.A.S.

### Married and to be Married.

The marriage of Captain B. P. GREENWOOD, R.F.C., elder son of B. I. Greenwood, of Shoreham, Kent., to KATHLEEN, daughter of the late G. H. DUDLEY and Mrs. DUDLEY, of Kingswinford, Staffs, took place on March 21st, at St. Andrew's, Wells Street.

The engagement is announced between CHRISTOPHER RIDLEY RICHARDSON, Lieutenant, 6th Royal West Kent Regiment, attached R.F.C., second son of William Ridley Richardson and the late Mrs. Richardson, of Ravensell, Bromley, Kent, and WINIFRED MARY, eldest daughter of ALFRED LODGE, of Charterhouse, Godalming, formerly Professor at R.I.E. College, Cooper's Hill.





By R. P. HEARNE.

EVENTS are marching rapidly in the world of airships. Lord Montagu's accession to the Air Committee will give that body a wider view, and his advocacy of Zeppelins has already done much good. The new Admiralty rigid airship is announced to make its *début* at an early date, and much interest will attach to its doings. Since 1913 the French authorities have had a captured Zeppelin in their possession, and this affords invaluable data which our authorities most certainly ought to have availed themselves of. Very probably this obvious step has been taken, and if so there can be no excuse for the designers of the new ship should it prove a failure.

### The Supremacy of the Air.

Even if it be equal to the latest type Zeppelin we shall not be completely satisfied. When we are fully entered upon our great programme for gaining the supremacy of the air, we must be in advance of Germany not only as regards aeroplanes, but in Zeppelins also. The people and the politicians are waking up to the fact that Germany will not be wiped off the map permanently through this war, however badly she may be beaten or impoverished. With her industry and organisation she will rise again, and if we sink into weakness or inefficiency the Germans will be tempted to take their revenge. We may regard Prussianism as a malignant disease, which can only be repelled by nations which keep strong all the time.

### Some Specifications for a Super-Zeppelin.

In the matter of airships it will be opportune now if we consider our policy, assuming that it is our earnest desire to excel Germany in this branch of warfare. On broad lines it may be said that we must aim to put into the air against each German Zeppelin a super-Zeppelin, using the prefix to indicate increased efficiency rather than greater dimensions. In war time it would not be wise to set forth in detail the differences which should exist between the two types of ships, but I can lay down a rough specification here by giving a few of the main requirements to which we must work.

To attain superiority over the latest Zeppelins our builders might be set the following general specifications:—

- Length of ship.—Not to exceed 500 ft.
- Gas capacity.—Not to exceed 1,000,000 cubic feet.
- Armament load in full war trim.—Not less than 6 tons.
- Speed.—Maximum not less than 75 miles per hour in still air for one hour's run.
- Average speed for full range of travel.—50 miles per hour in still air.
- Range of action in war trim.—Not less than 800 miles at 50 miles per hour average speed in still air.
- Engines.—Not fewer than three to be fitted; any two giving average speed of 50 m.p.h. in still air.
- Flotation power.—A minimum height of 2,000 ft. to be reached in full war trim.
- A raiding height of not less than 6,000 ft. with full munition load and half fuel load.

Climbing power (with planes).—Up to 10,000 ft. with half fuel load and full munition load.

Gas control.—Automatic gas control for fore and aft balancing of ship, for tilting, and for regulation of pressure.

Reserve gas supply to be carried.

Total gas supply to give flotation for 120 hours at minimum of 2,000 ft. Multiple gas bag system to be employed.

Here we have the outlines of a standard for working to. All the points are not within present achievement, and the ship which complied with them would well merit the title of super-Zeppelin. I am careful not to touch upon design, or engine power, although many interesting things could be said as to essential detail improvements.

### A Free Hand for Designers.

Of course a still higher standard might be set in various respects by a Government desirous of arriving at the best in airship design. But a free hand must be left to designers as to the manner in which they will arrive at the results. In one respect, however, very stringent rules should be laid down, viz., protection against fire. Yet another point of great importance is the arrangement of the vital parts so that the ship could withstand some amount of peppering from shrapnel at long range, or at least maintain its buoyancy. For this reason the multiple gas bag system is essential in any design.

Speed and climbing power, however, are the best guarantees of safety, and coupled with these might be quick manœuvring power. The Zeppelins already possess this to a very considerable extent, and I have seen a ship baffle the gunners very cleverly by its agility in changing position and altitude.

### Rapid Manœuvring.

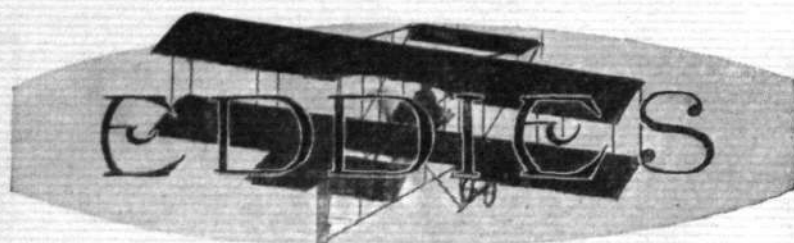
No aerial vessel is, indeed, unwieldy in manœuvring, since every craft worthy of the name has the ability to climb or dive, as well as swing from side to side in the same plane. This factor alone greatly improves the protective powers of aerial vessels against gun attack from the ground.

The Zeppelin, for example, by its aerostatic power can rise vertically like a bubble in a soda syphon. It can also drop vertically, assuming, of course, that the air is still and the ship not travelling. With wind or propellers at work, the direction of ascent or descent is very varied, to the great confusion of the gunner. Then again, by using its gas control system, the Zeppelin can climb by the aid of its planes.



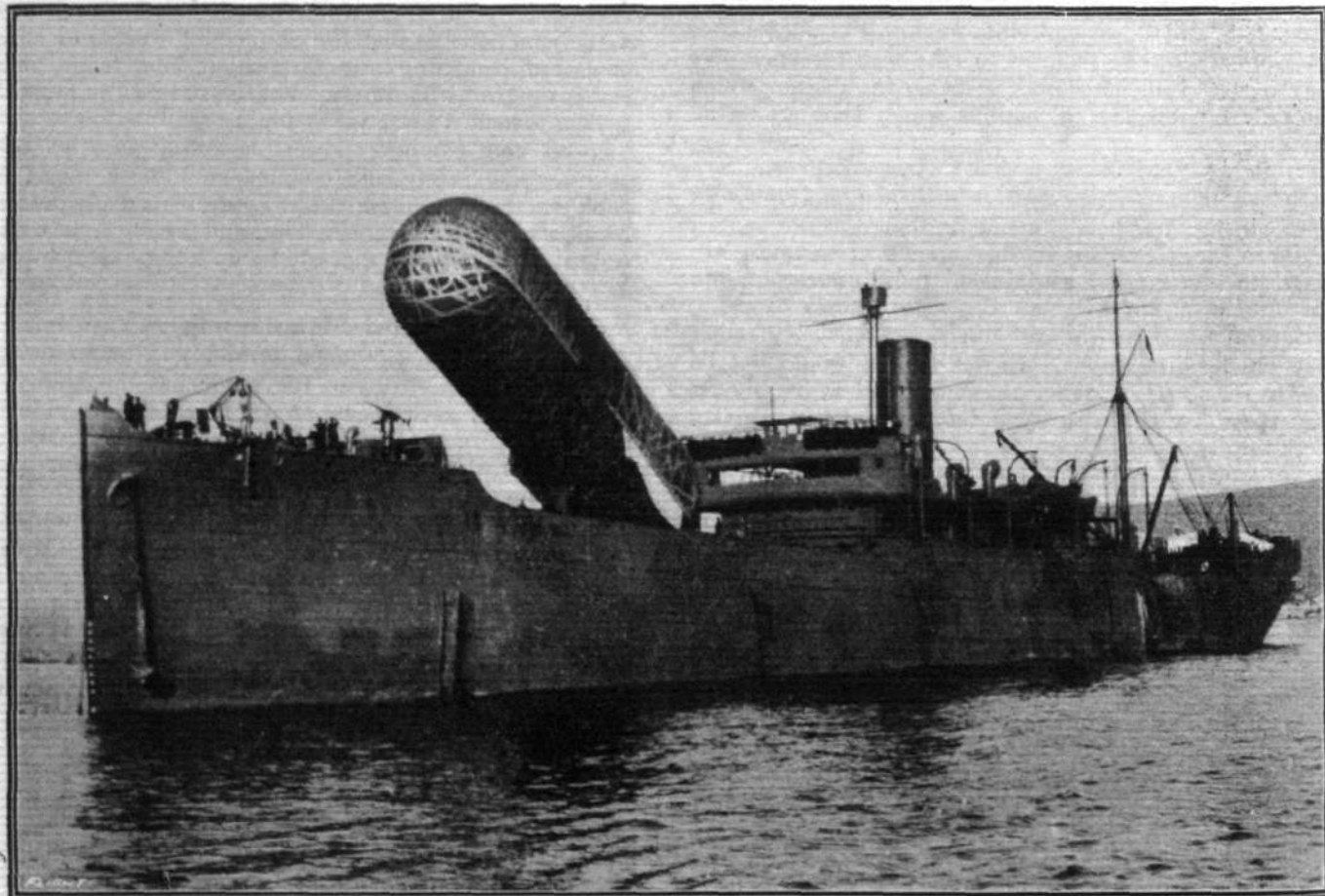
### The "Zeppelin Line."

ALTHOUGH the war put a stop to its regular activities, the German Passenger Airship Co., of Frankfurt-on-Main, according to the annual report just issued, was occupied on the manufacture of parts for Zeppelins, and the gross earnings for the year were £35,000, which will enable a substantial amount to be written off the deficit. Revenue was also obtained from the lease of the Company's sheds at Baden-Baden, Hamburg, Frankfurt, Dresden and Potsdam, to the Government.



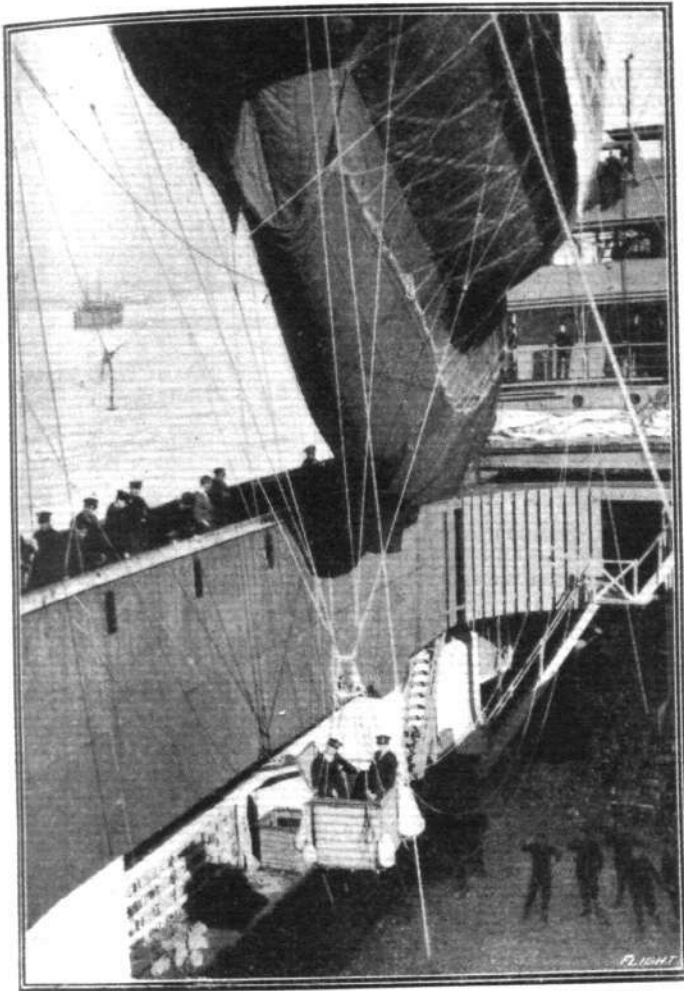
WHEN I wrote my par. in "Eddies" last week in which I ventured to prophesy that we should yet live to be officially informed that our aviators had chased the seaplane raiders and brought them down, I hardly anticipated such a speedy fulfilment of my views. Thanks, however, to Flight-Commander R. J. Bone, R.N., to whom fell the honour of being the first aviator to bring down a German seaplane raider close to our shores—and, by the bye, who happened to be on the scene "for the day"—there will be one more Hun *communiqué* that finishes up: One of which failed to return. The event is, it appears to me, of far greater importance than that represented by the mere loss of a single machine, since it may signify the beginning of an effective defensive aerial patrol of our coasts. We shall not, I feel sure, have to bring down a very great number of these daylight visitors before the Kentish coast becomes a good deal less attractive as a rounding mark for these little excursions across a portion of the North Sea. Curiously enough, the machine which overtook the raider was, according to reports, a small, fast single seater scout, and it has been stated that the other machines which started in pursuit were soon outdistanced. It is not very long ago that the

opinion was expressed in these columns that the best defence against daylight raiders would be a machine of this type. Judging from the reports, it would appear that the hostile machine was some thirty miles out at sea on his return journey before being overtaken. If it is presumed that the pursuing machine started out when the raider was over the coast, and that the speed of the German seaplane was about 60 m.p.h., which is, I think, a fair figure for a machine that has to carry sufficient fuel for the double journey, and a number of bombs in addition, the raider would take half an hour to reach that point. The thirty miles out to sea would probably be covered by the British machine in about twenty minutes or so when flying level, and another ten minutes for reaching the altitude at which the German was making for the Vaterland. After allowing a few—say fifteen—minutes for the actual fight, and the time taken for the return journey, Commander Bone's absence, which is stated to have been some eighty minutes, appears to tally with the suggested figures. It will therefore be seen that an ordinary scouting biplane, of which we should have an ample supply, is quite capable of attending to the defence of coastal towns, provided it is ready to go up, or has even taken the air, as was, I



ON BOARD THE KITE BALLOON SHIP, H.M.S. "CANNING."—General view of the ship with the balloon showing above the deck about to make an ascent. (Official photograph issued by the Press Bureau.)





**THE KITE BALLOON SHIP, H.M.S. "CANNING."**—The balloon and observers above the open hold in which the balloon is housed when not in use. (Official photograph issued by the Press Bureau.)

believe, the case on this occasion, when the raider heaves in sight. This should be sufficient proof that the defence, in the daytime, of places of importance on the portion of the coast most likely to be attacked, is not such an extremely difficult problem as some would suggest.

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Compared with the feeble German attempts in sending their raiders in twos and threes, the Allies' raid on Zeebrugge on Monday morning was an imposing affair, and the most ambitious so far. There is little doubt that a great deal of damage was done, and it will be a reminder to Germany that although we at present have nothing in the way of airships that can match the Zeppelins we are not by any means incapable of administering punishment to places of military importance by the air routes. And, except for the fact that the effective radius of action of a fleet of aeroplanes is necessarily much shorter than that of a large rigid airship, there is greater certainty of striking an effective blow when the charge of explosives is divided among a great number of aeroplanes, than when it is carried on a single airship. Besides the chances of all, or at least a very high percentage, of the attacking force returning safely are immeasurably superior. If one or two machines are damaged it will not greatly matter, looking at it from a military point of view, whereas once a Zeppelin is damaged there is every probability of it being done for, crew, explosives and all.

When the Germans first introduced the kite balloon it was ridiculed by most folk on account of its somewhat weird and wonderful appearance. During actual war conditions, however, this peculiar type of aircraft has proved highly useful for observation purposes, and soon both the French and our own people turned their attention to the building of these "sausage" balloons. Both at the front, in Flanders, and during the Dardanelles campaign the Parseval Siegsfeldt observation balloons were employed extensively, and the accompanying photographs will give a good idea of how these gas-bags are housed on board ship. In spite of the risks attending the ascensions in these captive balloons there has never, I believe, been any difficulty in getting officers to man them. There are cases on record of anchoring cables breaking and "sausages" drifting along on a sometimes none too gentle breeze. Personally I would prefer a good aeroplane and a reliable engine; but there is no accounting for tastes.

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In spite of the number of pupils being trained at our various flying schools, fatal accidents are, fortunately, extremely rare, although minor smashes are frequent enough, to be sure. It was a most regrettable accident that cost one of the pupils at the Ruffy-Baumann school, Mr. Laidlaw, his life last week, and one which it is very difficult to explain satisfactorily. From what I learn, the known facts of the case are as follows: Mr. Laidlaw, who had been at the R.-B. school for some four months, was, according to the proprietors of the school, a most steady and careful pilot. He had done straights, circuits, and figures of eight on previous occasions, and his flying as well as his landings indicated perfect mastery of the machine as far as straightforward flying was concerned. The machine on which the accident occurred was not strange to him, as he had flown it very well previously. On the day of the accident Mr. Laidlaw had the machine



A feature of Irish Flag Day on St. Patrick's Day was the number of emblems worn by khaki men of all grades. The Royal Flying Corps was well to the fore in this respect, the Irish "colleens" finding in them very willing patrons for their goods.

brought up to No. 1 pylon and started off across the ground heading towards the fence on the other side of the aerodrome. The machine was seen to be climbing at a very steep angle, so steep, in fact, that by the time the fence was reached it was at a height judged by the on-lookers to be about 250 ft. By then it was obvious that the climb was far too steep, and the machine was seen to stall and side-slip, which latter soon turned into a nose-dive. During this no attempt was, as far as could be seen, made to flatten out, and the engine was running all out until the machine struck. Unless one accepts the surmise that has been advanced that Mr. Laidlaw lost consciousness while in the air, it is difficult to explain the cause of the mishap. All the control cables were found intact, and I am told that the machine he was flying had

to be "held down" all the time, that is to say it left to itself it would constantly climb. On a nose dive, therefore, the machine, if left to itself, would flatten out automatically, besides which, any pilot with the smallest experience would instinctively pull the lever towards him when diving towards the ground. Another thing which seems to indicate that Mr. Laidlaw had lost consciousness is the fact that he never switched off, which, after pulling the lever, would be the first thing a pilot would see to. On the other hand, in accepting the theory of his fainting, it is most probable that he would, when the nose dive commenced, be thrown forward against the lever, thereby aggravating the dive. It is to be hoped that these points may be satisfactorily cleared up at the inquest. ÆOLUS.

## LORD MONTAGU ON THE AIR SERVICES.

PRESIDING over a discussion at the Constitutional Club on the 15th on "The Need for a Strong Air Service," Lord Montagu of Beaulieu, referring to the offer made to him by the Prime Minister of a seat on the Aviation Committee, remarked that that new responsibility alone made him weigh his words. It was not so easy, therefore, for him to condemn or even suggest. He had accepted the Prime Minister's invitation to assist the Derby Committee solely on the ground that he hoped to be able to do some good there. "I hope, and I have reasons for saying I am hopeful," he added, "that it will form the nucleus of something much wider, much more responsible, and much more powerful in the way of a Board of Aviation, and possibly eventually a Ministry."

Developments, Lord Montagu said, must come by degrees, and he recognised that it was no easy matter, especially in the middle of a great war, to alter the existing system and change constituted authorities, but he did not despair of doing some good work on the Committee. Anything with which the name of Lord Derby was associated was sure to run on straightforward and honest lines. The Government, he had already pointed out, were not treating the subject of aviation with sufficient seriousness; they were regarding it merely as an auxiliary of the two great services. He had also warned the Government about the danger of Zeppelins.

He thought now, as he thought then, that Zeppelins must be taken very seriously indeed. He had foreseen for some years their possibilities of doing damage, and until recently, as proved by the haste with which the new defences of this country against aircraft have been organised, the Government had not realised all the possibilities of serious damage to arsenals and munition factories, and the danger by fire. There is also the danger, which he regarded as the greatest of all, the danger of Zeppelins accompanying a hostile fleet and being able at a distance to detect the strategic movements on the part of our Fleet and be able to direct the enemy's fleet in such a way as to neutralise our advantage in ships and guns.

Preparation should be made, not only for the necessities of the war, which might end next November, but which would probably go on to November in the following year. We must think out a proper Imperial air policy, for whatever policy was laid down it must necessarily embrace the whole British Empire.

The problem must be looked upon not only from an insular but from an Imperial point of view.

This weapon of air power is going to be in the future the most important of all the great weapons which naval or military science can put in our hands. It is going to be the weapon of the impoverished nation. After the war Germany may be to a large extent bereft of men, and may have her fleet at the bottom of the sea, and have Essen blown up. But Germany will contain some people who cultivate and love science as to-day. You can have 1,700 aeroplanes to the cost of a Dreadnought, and as Zeppelins cost less than a torpedo-boat destroyer, it stands to reason that a nation which has still great scientific ability, but an empty purse,

### Relief for Zeppelin Victims.

IN the House of Commons last week Mr. Lloyd George said the National Relief Fund was available for granting temporary assistance to Zeppelin raid victims, but he could not promise assistance from public funds.

### Reparation for Air Raids.

IN the House of Commons on the 14th inst., Sir Arthur Markham asked, whether on every occasion when bombs were dropped on unfortified places or places where munitions of war were

will try and establish a military existence again in a way which will cost the least possible amount of money. Thus might Germany re-establish herself with the aid of a superior air fleet, and be in a position to cause further trouble all over the world. A great responsibility rested upon the Government to see that the foundations of the air service were laid deep and wide. It was no news to the German Staff to know that we had no dirigibles worthy of the name, but we shall see how far it is possible to produce them before the end of the war. In the matter of aeroplanes, we had lost the supremacy of the air which we had at the beginning of the war. It would be the duty of the new Committee to see that that supremacy was recovered at the earliest possible moment. Our pilots were the most gallant in the world, but we asked them to fly with inferior machines on which the chances of life and death were too near.

To waste life because machines were not equal to those of the enemy was a very serious crime. Lord Montagu made a strong appeal to young men all over the kingdom and in all parts of the Empire to enter the service, for in it there lay a chance of glory—and doing duty sometimes without glory—greater than could come in the other services. It was to the young men of England that they must look to carry on the greatest service of all. In asking for the postponement of hyper-criticism of the efforts that were being made, Lord Montagu said that if they achieved only half of what he hoped the Committee could achieve, then he thought he could say he had been justified in joining it, and asking them to give it a good start.

Mr. Joynson-Hicks described the air service as the spoilt child of politics. He strongly urged an increase in machines, and declared that three aeroplanes at least ought to be placed at the disposal of each pilot on active service. We could build the much-vaunted Fokker biplanes in this country, and it was no secret that we were building them, but we did not do so in time. If we had only done it six or nine months ago, we would not have heard of the wonders of the Fokker machine in the enemy's hands. It was necessary that our pilots should have bomb-carrying machines, so that, in company with fighting machines, they could go behind the German lines and drop explosives on specified places.

As to the importance of the Zeppelin in modern warfare, he said that it would be possible to drive the German navy out in a short space of time by sending such machines on raids to Kiel and Wilhelmshaven. That could easily have been done had there been imagination in the War Office and the Admiralty. The defence against Zeppelins was to be found in aeroplanes, but it was unfair to send pilots up unless their machines were high-powered and well-armed and unless adequate landing-stages were provided. It was only in the air that any movement could be expected in modern warfare. Was it possible, he asked, that Germany was lying idle now? Was it not likely that with the return of fine weather vast fleets of German air machines would come out? Personally, he did not think it probable that the enemy would disregard that chance.

not made, the Government would sequester for each offence a large sum of German moneys invested within the British Empire.

Mr. Lloyd George, replying for the Prime Minister, said nothing could be added to the answers previously given.

In answer to Mr. Brookes, Mr. Lloyd George said that an opportunity for further discussion as to the steps now contemplated or being taken by the Government for the improvement of the air defences of the country would be given immediately after the financial business had been completed, and a further statement would then be made.



## PARLIAMENT AND AERONAUTICS.

### IN THE LORDS.

IN the House of Lords on the 15th inst., Lord Montagu of Beaulieu asked the Earl of Derby, as representing the Inter-Departmental Committee on Air Service, what the functions of that Committee were, and if he could give any information as to the work it had done.

The Earl of Derby, in his opening sentences, said he was sorry he had given any impression that he had minimised the importance of the Committee of which he was chairman; he did not wish to minimise it, but only to prevent the public from magnifying it. He proceeded: I am glad to think that the noble lord will know the functions of the Committee as well as I do, because he has consented at the request of the Prime Minister to come on the Committee. I am sure nothing can give greater confidence to the country at large that the Committee will endeavour to do good work for the Air Service than the appointment of Lord Montagu as one of its members.

The chief ends to be attained by the Committee are to ensure that the manufacture, supply, and distribution of material required by aircraft are in accordance with the policy of aerial warfare laid down by His Majesty's Government, to avoid clashing and overlapping demands on the manufacturing resources available, whilst securing the full and harmonious use of the same, and to eliminate correspondence between the Departments on points which affect more than one. This Committee has nothing to do with the defence of the kingdom. That is quite rightly left in the hands of Lord French. Air policy is not framed by the Committee, but may, of course, be affected to a certain extent when we go into the question of production of aircraft by the information we are able to give to the War Committee. The air policy has been laid down by the Government. Each branch of the Service has its own duty to perform, and the duty of the Committee is to see so far as it can that all that each branch requires to carry out the policy laid down is placed at its disposal. It is to prevent overlapping, to provide closer intercommunication between the two Departments that the Committee has been formed, and even in the short time we have been in existence we have been able materially to help to

join the work of the two branches of the Air Service. A particular type of aircraft was put at the disposal of one branch, whilst in return that branch was able to release other machines which were more useful to the Naval branch. I hope we shall increase the output. We have at present no executive work; the executive work is carried out by the two branches of the Air Service. But I feel that this Committee is only the beginning of what may be a very large departure in this kingdom. I hope that we shall be able to bring the two branches so closely together that there can be no question of competition between the two, and I am strongly of opinion that we shall be able to justify the confidence that has been placed in us by His Majesty's Government. It is impossible to say what is in the future. All I can say is that I personally should not have the slightest hesitation in asking the Prime Minister to relieve me of my post of chairman if I felt that the work was beyond my scope or necessitated my abandoning my work at the War Office, and I should do it all the more readily knowing that I shall have as a colleague Lord Montagu, whose experience in matters connected with the air will now, I hope, be given that full scope which it ought to be, and which can be, of such benefit to the nation.

Lord Montagu said that at the request of the Prime Minister he had become a member of the Committee. He felt it to be his duty to help in every way he could. He trusted that what Lord Derby had said about the extension of the work of the Committee would take place before long, for he felt it should be the nucleus of something much larger, and which should be able to do more than the present Committee was doing.

Lord Rathcreedan, in a maiden speech, said that with regard to compulsory military service he had always been at variance with his party. He felt now that the time had come when the Government must take control of all the fighting manhood of the country. In that way they could secure the best men for the work for which they required them, and in particular for the Flying Corps and for the construction of aircraft.

### IN THE COMMONS.

IN the course of his speech introducing the Army Estimates in the House of Commons on March 14th, Mr. Tennant, Under-Secretary for War, said:—

It was a great mistake to suppose that the Government had not been fully seized with the importance of the defence of the country against hostile aircraft or that they had regarded it as a matter of secondary importance. On the contrary, they looked upon it as a matter of primary importance. It was useless to increase the size of our army abroad if the bases from which those armies drew their supplies and ammunition were going to be ruined by hostile aircraft. The best guns and the best gunners must be employed on the all-important duty of defending these bases. These gunners were regarded as just as much on active service as their comrades in France. They were, in fact, interchangeable, being drafted abroad or brought home as circumstances dictated.

The position in regard to anti-aircraft guns, although it leaves a great deal to be desired, is better to-day than it had ever been before. We have provided at Shoeburyness a training school for gunners where a large number of officers and men are being taught the difficult task of shooting at objects in the air. We have established an organisation of defence which for London is complete, and for the provinces is approaching completion. For London there have been provided aeroplanes, landing places, and lights. The House should realise that in this matter the possibilities of provision for defence were unlimited. It was difficult to conceive finality in any such provision. For London defence had been completed on an agreed scale; and we are applying it to the rest of the country. When more material is available the standard of these defences will be raised, and more improvements made.

Mr. Lynch: What is the exact meaning of the word "complete"? Does it mean that Zeppelins will be prevented from coming?

Mr. Tennant: I said the organisation was complete.

When war broke out it was realised that a great extension of the Royal Flying Corps would be necessary. The success of that development depended upon simultaneous progress along four lines—the provision of aeroplanes, the provision of engines, the supply of mechanics, and the training of pilots. At the outbreak of the war the design of our aeroplane was not inferior to that of any other nation, and during the war we had kept pace with advances made abroad, though we had from the outset always been handicapped by the want of engines. There were very few firms prepared to undertake to make aeroplanes, and especially

engines, so that when war broke out we were behind France and Germany in the manufacture of engines. All these difficulties had been met by the energy of the supply branch of the service, with great assistance from the Ministry of Munitions. A great proportion of the engines now in use were of British design, and a great majority were of British manufacture. A real supply of British high-power engines was now coming forward, and would produce a marked improvement at once. Every squadron had its full complement of skilled mechanics, and more trained pilots were now being turned out every month than we had been able to mobilise from all our resources in August, 1914. This output could be largely increased in the near future.

Mr. Pemberton-Billing, who was received with cheers, said he asked the indulgence which he understood that the House usually gave to a new member, and he craved that indulgence mainly on account of the rather peculiar circumstances which were responsible for his presence in the House. Within an hour or two of taking his oath at the table he was on his feet because he thought it was his duty both to his constituents and to his country to speak at the earliest possible moment. It would not be fitting, and he knew it was not done, that he should drag the dust—perhaps he might say the dirt—of a hotly-contested by-election into the comparative calm and cleanliness of the House of Commons. But he would touch one personal note. He left the Royal Naval Air Service because he felt that unless some man who understood the exact position of affairs came to the House with the backing and the authority which only a constituency could give him, the Service would remain a byword among members and the subject of almost tragic mirth in its hopeless, futile attempts to defend this country.

He had listened with considerable interest to what the Under-Secretary of State for War had said on matters connected with the Air Service. The one remark he had to make upon it was that he was sure he was grievously misinformed. Eighteen months ago we had at the disposal of the Air Service about one-twentieth of what we had to-day, but we succeeded in reaching Zeppelin bases and carrying the air war into the enemy's country. That proved that, though our material was lacking, our personnel was such that we were able to carry out raids successfully. Therefore he definitely joined issue with the First Lord of the Admiralty in his statement that the lack of material was responsible for our present policy of masterly inactivity and deplorable delay. For the first six months of the war the Air Service was rich in leadership. In the last six months of the war the material had improved as well as the leader-

hip. Between those two dates there had been a sort of Tom Tiddler's ground—a deplorable state of things which was responsible for the present condition of affairs.

The *crux* of the whole question of the Air Service at present was one of *personnel*, and by *personnel* he meant beginning with the chief, whose appointment should not be a mere political concession, but the creation of a definite leadership carrying with it the support and confidence and loyalty of the entire Service, and embracing also the human material which would be the sound heart of such a Service. Once we got the right man at the head the *personnel* the material would grow. We should have a vigorous offensive instead of the present impotence. He had in his mind to place before the House his own detailed proposals for the immediate strengthening of our power in the air, for the creation of an Imperial Air Service, but he proposed during the coming air debate to deal fully and freely with all the facts and figures. If he might make a general criticism, he would say that if we had such committees as were found in the French Chamber, it would be an easy matter for him to lay before them all the correspondence and technical information he had. He felt sure that the Service would take kindly to such a course. It might possibly save the words "Too late" being written across yet another phase of the history of this war. There need be no more delay. We could strike now in the matter of aerial defence. We must strike now. He earnestly appealed to Mr. Balfour to take his courage in both hands and issue definite orders that all the existing material we had should be immediately employed in raids over the enemy countries.

He was quite sure that we had the material. He did not propose to give the facts and figures unless he was challenged. He quite appreciated what a mark a Zeppelin shed was. It was as vulnerable as the Crystal Palace. We possessed the machines to reach them. We heard and read of a new Trafalgar. There were rumours of a coming aerial raid. Was it too much to ask that our Grand Fleet should cease to be handicapped in its movements by this never-ceasing flow of information conveyed to the German Admiralty by

## The Royal Naval Air Service.

IN the House of Commons on Tuesday, Mr. Brookes asked the First Lord of the Admiralty whether he had considered the advisability of appointing a naval flying man as a member of the Board of Admiralty, more especially in view of the action of the War Office in nominating a member of the Royal Flying Corps to a seat on the Army Council.

Mr. Balfour replied that in the case of a service so new and so rapidly growing, and of whose full possibilities no man can speak with confidence, it would be foolish to pretend that we have reached the final organization. The subject is too large to be dealt with by question and answer.

On the 15th inst., Dr. Macnamara, replying to Mr. Brookes, said that there are no naval officers without experience and knowledge of air-service requirements in important administrative positions in the Royal Naval Air Service.

## Precautions Against Air Raid.

ON the same day a question was asked by Sir A. Gelder as to whether the military authorities on the occasion of Zeppelin visits would request Companies to extinguish signal and other lights on railways, rivers and docks as such lights had proved a direct guide to large cities and towns that had recently been raided.

Mr. Tennant replied that the matter was entirely within the control of the Field-Marshal Commanding-in-Chief the Home Forces, who would issue all the instructions necessary to secure the desired object.

## Raids on Enemy Aircraft Bases.

IN the House of Commons on March 15th, Mr. Brookes asked whether it is possible to organise successful raids on enemy aerodromes and sheds, as in the early days of the war; and, if so, what is the cause of the apparent change of policy.

Mr. Balfour replied: My hon. friend is in error in supposing that there has been any change of policy of the kind he suggests. The Government are as desirous as ever of using aircraft offensively, but more than that it would not be desirable to say at present.

Dr. Macnamara, replying to Mr. Pemberton-Billing on the following day, said: All operations by naval forces are carried out by officers acting under the authority of the Board of Admiralty. In some cases orders are given directly from the Admiralty; in other cases they are given by Commanders-in-Chief, or other responsible officers.

Mr. Pemberton-Billing asked further whether the Royal Naval Air Service had been prevented from carrying out reprisal raids owing to the religious scruples of any member of the Board of Admiralty; and, if so, did the First Lord of the Admiralty propose to allow personal and private views to stand in the way of our effective offensive.

Dr. Macnamara: No personal or private views influence the

the spies in the air? We must exterminate the Zeppelins; we could do so. We had all the material ready to initiate air raids on a very great scale. When they considered that twelve months ago last November we partly destroyed a Zeppelin factory at Friedrichshafen with three machines which would now be looked upon as old-fashioned, three pilots, and eleven bombs, and then considered that to-day we had a hundred times as many machines, a hundred times as many pilots, and more efficient bombs, and that our machines were capable of carrying loads of explosives from four to ten times as great, was it to be wondered at that the public had become slightly indignant that no action was taken? People were ready to make any sacrifice in this war, but they were not prepared to remain in darkness while our rulers remained indifferent. The right hon. gentleman had suggested that we had neither the machines nor the pilots. He should be pleased to introduce him within 24 hours to a hundred pilots, to lead him by the hand to the machines, and to put the bombs on the table of the House.

This war might possibly eventually be determined in the air. And at the cost of two or three days' hostilities we could gain and maintain supremacy in the air. Was it to be wondered at that the country should be demanding that our material should be used; that the men in the Service were demanding that they should be sent out to fight, instead of staying at home? He earnestly asked Mr. Balfour to insist, not in six months' time, not in six weeks' time, but if necessary in six minutes' time, that the material which was now waiting, the bombs which were now being stored, which were due for delivery in many places in Germany, should be delivered forthwith, and without further delay.

Mr. Long, in replying, said that Mr. Pemberton-Billing was in error in suggesting that Lord Derby was in charge of the air defences of London. Lord Derby was now adding one or two men to his Committee, whose names would give great confidence, and if Mr. Billing liked to make suggestions to that Committee and carry out the offers he had made—short of producing bombs in the House—they would be gladly accepted.

Board of Admiralty. My right hon. friend knows nothing about the religious opinions of any of his colleagues.

Mr. Pemberton-Billing: Why have not the orders been given?

Dr. Macnamara: That question does not now arise.

## London's Air Defence.

MR. W. JOYNSON-HICKS, M.P., will deliver a short address on "The Air Defences of London" before the members of the City Livery Club, at De Keyser's Royal Hotel, on Monday, April 3rd, at one o'clock.

A public meeting, under the auspices of the United Wards Club of the City of London, has been arranged for Monday next, at two p.m., at the Cannon Street Hotel, to discuss the defences of the City against Zeppelin raids. Mr. Pemberton-Billing, M.P., will move a resolution, and Mr. Arnold White, Mr. H. de Vere Stacpoole, and others will speak in support.

## Flying Schools in Canada.

ACCORDING to a report from Toronto last week, authorisation having been received from the War Office for the enlistment in Canada of recruits for the Royal Flying Corps, a number of wealthy men here are forming a Canadian Aviation Association to conduct aviation schools at the principal centres.

## Inventions in France.

IN a report to the French Budget Commission on the work of the War Inventions Department, M. Painleré, Minister of Education, mentions that a large number of suggestions have been received, especially on the subject of anti-aircraft gunnery, many of them of great value.

## Marconi as Italian Air Minister?

ACCORDING to messages from Rome on Saturday rumours were current as to the possibility of Signor Marconi being appointed Minister for Aeronautics.

## Changes in Germany's Air Service.

AS in other countries the growth of the Air Service in Germany has necessitated some reorganisation. According to a message to the *Frankfurter Zeitung* from Berlin, it has been decided to establish "experimentally" a separate administrative control (*Intendantur*) of the air forces, and the head of the Army Air Service is to be given authority equivalent to that of a general in command of an Army Corps. Apparently the German flying service, when the details have been worked out by the Prussian Ministry of War, will be administered on the lines of an Army Corps.

## German Aeroplane in Holland.

THE *Telegraaf* on Monday reported that a German aeroplane, coming from Coblenz, landed at Herpt (Gelderland). The *Maasbode* says that the machine, which is undamaged, bears the identification mark "B2 1069-15 X 714." The two occupants will be taken to The Hague and interned. After landing they attempted to rise again, but were prevented by civilians and soldiers.



## AIRCRAFT WORK AT THE FRONT.

## OFFICIAL INFORMATION.

## British.

*General Headquarters, March 15th.*

"Considerable aerial activity. Many combats took place. A determined attack on one of our reconnaissances was driven off. A hostile observation balloon was forced to descend when attacked with bombs."

*General Headquarters, March 19th.*

"Hostile aeroplanes were again active, and there were many combats. A hostile machine was brought down in the vicinity of Radinghem. One of our reconnaissances was heavily engaged, but drove off all attacks, and drove down one hostile machine in a damaged condition. All our machines returned safely, having completed their missions."

*Admiralty, March 20th.*

"In the early hours of this morning a combined force of approximately fifty British, French, and Belgian aeroplanes and seaplanes, accompanied by fifteen fighting machines, left, and attacked the German seaplane station at Zeebrugge and the aerodrome at Houtade, near Zeebrugge. Considerable damage appears to have been done. Machines on an average carried 200 lb. of bombs."

"All machines returned safely. One Belgian officer is reported seriously wounded. All the British machines referred to were naval."

## French.

*Paris, March 15th. Evening.*

"Six aeroplanes of the first bombardment group and five double-engine aeroplanes dropped forty-two heavy shells on the station of Briulles."

"Very numerous aerial actions were fought to-day in the region of Verdun. Three German aeroplanes were seen distinctly to have been brought down by our machines in the German lines. One of our aeroplanes, attacked by four enemy machines to the east of Lore, fought them, and succeeded in bringing down one of its adversaries, which fell in the region of Cernay. The French aeroplane returned safely to our lines."

*Paris, March 18th. Afternoon.*

"Yesterday, in spite of the mist and the low clouds, our battle-planes in the region of Verdun made twenty-nine pursuing flights, in which they fought thirty-two actions to a conclusion. One Fokker appears to have been seriously damaged."

"Last night a group of seventeen aeroplanes dropped fifty-four bombs of heavy calibre, forty on the station of Conflans, and fourteen on that of Metz. The bombs attained their mark, and many explosions were noted along the railway lines, while three fires broke out in the station of Metz-Sablons. Although violently bombarded along their entire course, our machines returned safely."

"During an offensive reconnaissance another air squadron dropped ten bombs on the aerodrome of Dieuze and five on the station of Arnerville."

*Paris, March 19th. Afternoon.*

"In the region of Verdun one of our aeroplanes brought down an enemy machine, which fell in flames into our lines near Montzeville."

"Five of our double-motor machines bombarded the station of Metz-Sablons, the enemy ammunition depôts at Chateau Salins, and the aerodrome of Dieuze. Thirty bombs of heavy calibre were dropped during this expedition, of which twenty were dropped on the station at Metz."

"One of our bombardment squadrons, composed of twenty-three machines, dropped seventy-two bombs on the aviation ground of Sapsheim, and on the goods station at Mulhausen."

"Enemy aeroplanes sent in pursuit of our machines engaged them in an aerial battle, during which one French machine and one German machine brought down each other with their machine-gun fire. Two other German machines fell in flames, and three of our aeroplanes were seriously damaged, and had to land on enemy territory."

*Paris, March 19th. Evening.*

"Sergeant Navarre brought down his seventh German aeroplane in the region of Verdun. The enemy machine fell in our lines."

*Paris, March 20th. Afternoon.*

"About four o'clock this morning some British, French, and Belgian aeroplanes bombarded the aviation camp of Houtade, east

of Ostend. Nineteen French machines took part in the raid, and all have returned safely."

*Paris, March 20th. Evening.*

"During the night of the 19th our bombarding aeroplanes dropped twenty-five bombs on the railway station of Dun-sur-Meuse, where movements of troops on an extensive scale had been reported. All the bombs reached their objects. This morning one of our pursuit aeroplanes drove down in the region of Verdun an enemy machine, which fell in our lines."

## Russian.

*Petrograd, March 19th.*

"Our torpedo boats sank, near the Bulgarian coast, a steamer laden with petrol. They were attacked without success by enemy aeroplanes, which dropped eight bombs. The crew of the steamer was taken on board our torpedo boats."

## German.

*Berlin, March 15th.*

"Lieutenant Immelmann shot down two British aeroplanes, one east of Arras and the other west of Beaumont. The occupants are dead. Lieutenant Boelcke brought down two enemy aeroplanes behind the French line, the first above the fortress of Marre and the second near Malancourt (north-west of Verdun). Both machines were destroyed by our artillery. This was the tenth enemy machine that Lieutenant Immelmann had placed hors de combat and the eleventh credited to Lieutenant Boelcke."

"West of Cambrai a British biplane was forced to descend after an aerial fight, and the occupants were captured."

*Berlin, March 16th.*

"North of Bapaume Lieut. Leffers shot down his fourth enemy aeroplane, this being a British biplane. Near Vimy, north-east of Arras, and near Sivry, on the Meuse, our anti-aircraft guns shot down altogether three French aeroplanes. Above Haumont, north of Verdun, a large French aeroplane fell, after an aerial fight. The occupants were captured."

"In an aerial fight south-east of Beine (Champagne), a French aeroplane was shot down, its occupants being burnt to death."

"Enemy airmen last night again attacked the German hospitals at Labry, east of Conflans. The first attack took place during the night of March 12th-13th. No military damage was done. Of the population, one woman was severely and one woman and two children slightly injured."

*Berlin, March 19th.*

"On the night of March 17th one of our airships attacked the Entente Fleet near Kara Burau, south of Salonika."

*Berlin, March 20th.*

"Favoured by good observation conditions, the artillery and air activity has been very vigorous on both sides."

"In the course of air battles Lieutenant von Althaus shot down his fourth enemy aeroplane over the enemy's line west of Lihons, while Lieutenant Boelcke shot down his twelfth aeroplane over the Forges Wood, on the left bank of the Meuse. Moreover, the enemy lost three further aeroplanes, one in an air battle near Cuisy, west of the Forges Wood, and two others through the fire of anti-aircraft guns. One of the last fell down in flames near Rheims, the other turning over several times in the neighbourhood of Ban de Sapt, close behind the enemy's lines."

## Austrian.

*Vienna, March 15th.*

"Italian airmen dropped bombs on Trieste without, however, causing any damage."

## Turkish.

*Constantinople, March 16th.*

"On the evening of March 14th, in the neighbourhood of the landing-stage of Akaba, at the head of the gulf, east of the Sinai Peninsula, bombs dropped by an enemy aeroplane all fell into the sea."

"We shot down an enemy aeroplane two kilometres east of the Suez Canal. The occupants escaped."

"One of our aeroplanes attacked enemy aeroplanes with machine-gun fire, and forced them to fly to Imbros."

*Constantinople, March 20th.*

"Iraq Front.—On Saturday one of our aeroplanes threw some bombs on Kut-el-Amara and succeeded in hitting a gun and an enemy detachment."

## From Other Sources.

A letter from an officer attached to the Royal Flying Corps dated February 8th, and published in the *Times*, gives the following little peep at the "day's work" in the R.F.C. :—

"No news since my last, except very sad—for us anyway. We have just lost a very gallant and very dear member of our mess, and his last effort makes us all proud to think he was one of us."

same he plugged on, and landed his machine just this side of Ypres; his observer, helped by some gunners, got him out and took him to a farm, where they bound him up and then sent him down on an ambulance to a dressing station. But the main artery had been cut, and the old chap died from loss of blood an hour afterwards.

"It was a magnificent effort bringing the machine over the lines and landing it, thereby saving his observer, when he was half-fainting the whole time through loss of blood. Well, it is war—but it hits hard sometimes; he was one of the best. I might mention that the bullet which got him was the only one that even hit the machine at all. I tell you these things, not to put you down in the dumps (you have more sense, I know), but because they are after all the things that matter nowadays, and it should do you good and make you very thankful to hear how some of our men out here can die.

"I had to tow a pilot out to where the machine landed for him to bring it back, and took the opportunity of nosing round near the firing line again."

Particulars have been published in the *Matin* regarding the fight in which Lieut. Guynemer, who has brought down a number of German machines, has just been wounded in the region of Verdun. Fortunately, his wounds are not serious, and after two or three weeks in hospital he will be able to return to duty.

On March 15th Lieut. Guynemer started off on a new and smaller but more speedy aeroplane than usual. He noticed two German aircraft above him, and attacked one from the rear. The German machine turned over and crashed to the ground.

After this first victory Guynemer swooped down on the second German aeroplane, but, misjudging his speed, he got ahead of the German after having only fired seven or eight shots, which went wide. The enemy, seizing the advantage, opened fire and some splinters struck Guynemer in the face cutting somewhat deeply into his cheeks and nose, while two bullets went through his left arm.

Guynemer let himself drop like a stone for about 1,000 ft. so as to give his opponent the impression that he had brought him down. The German, thinking the battle won, proceeded on his way. Meanwhile, Guynemer recovered himself, and steering his machine with one hand, succeeded in landing within the French lines.

The *National Zeitung* of Basle (Switzerland) reports great activity of Zeppelins in lower Alsace. Count Zeppelin is stated to have left the headquarters of the Crown Prince, and is now conducting experiments near Mulhausen.

The *Daily Mail* comments on this that "It may be only a coincidence that the 'goods station' at Mulhausen, which is 20 miles north-west of Basle, was one of the places selected by the French for their air raids in force during the week-end."

In a despatch describing a five days' visit to the British front in Flanders, the London correspondent of the *New York Herald* says:—

"While watching this engagement, which the official communiqué reports as 'desultory firing,' I was thrilled by watching the chase of a Taube by two British aeroplanes. The machine guns of pursuer and pursued barked viciously, but the Taube was too speedy and found safety, though it was the target of many aircraft guns as it passed over the British positions, by disappearing behind a clump of trees into the German lines, the trenches of which, paralleling in zigzag fashion those of the British, were plainly discernible through a field-glass. This Taube, it seems, was discovered as it was pre-

paring to bomb a town which had been the object of a previous raid by enemy aeroplanes.

"Snow again on Monday—a day made interesting by a visit to a British aerodrome just as several aeroplanes, ready to bomb, were starting on a flight over the enemy's lines. Here I got a close view of the Bristol Scout type of aeroplane capable of doing something like one hundred miles an hour. I also saw scores of other machines, including several battle biplanes. I was amazed at the sangfroid of the mere boys, who, in an aeroplane carrying eighteen to twenty-four of these bombs, start daily and sally forth from this aviation base over the enemy's lines into the jaws of death. I used to laugh at the Charlie Chaplin moustache. I now look upon it as the red, brown, black, or blonde badge of courage."

Mr. George Ward Price, writing from Salonika to the *Daily Telegraph* on March 18th, says:—

"Last night a Zeppelin made another appearance in the direction of Salonika, but got no nearer than some twelve miles away. It dropped about twenty bombs, which fell on open ground. This afternoon, at the moment of wiring, two German aeroplanes, taking advantage of the fine weather, have just flown over the town at a great height, heavily bombarded. They are now disappearing northwards."

The *Telegraaf* on Monday states that Allied airmen on the previous day made a reconnaissance on the Belgian coast. At two a.m. on Monday another aeroplane appeared over Zeebrugge and was subjected to a heavy fire by the Germans.

A British squadron appeared at four a.m. and began bombarding the German positions on the littoral. The bombardment was still in progress at half-past eleven this morning, and the German batteries were making a vigorous reply. The sound of the guns, however, was gradually receding, showing that different parts of the coast were being bombarded.

Writing to the *Daily Mail* from Paris, on March 15th, Mr. W. L. McAlpin said:—

"The French airmen continue to add to their long list of triumphs. One of their most recent feats deserves more than passing mention. A brilliant young airman, whose name I am not at liberty to mention, went out reconnoitring over Alsace. On his way back he caught sight of four enemy biplanes coming up from the south to attack him. Instead of profiting by his superior speed to give his opponents the slip the Frenchman boldly challenged them. Diving into the midst of the enemy craft he opened fire with his machine gun. His marksmanship was good, and so cleverly did he manoeuvre that he brought down one of the four. The three others fled, and the French pilot resumed his homeward flight.

"The same day 11 French airmen, 5 of whom were flying in double-engined aeroplanes, started on a raid over Brioules railway station, north of Verdun. After dropping 42 dynamite bombs on sidings where the Germans had accumulated large stores of shells and munitions they returned safely."

In a message on the previous day regarding the marshalling of new German forces for a fresh attack, Mr. McAlpin said:—

"Indeed, one division of them caught by French air observers when crossing the open ground south of Forges, marching to take up assaulting positions on the fringe of the Crows' Wood, suddenly found itself a mark for a dozen batteries of French 6-in. guns. The Germans hurriedly withdrew, but not before they had left a grim tale of dead and dying."



## The Weather Zeppelins Have Come In.

COMMENTING upon the analysis by the correspondent of the *Daily Chronicle* of the atmospheric conditions prevailing upon the occasions when Zeppelins have visited these shores, the aeronautical contributor of the *Observer* points out one or two discrepancies as follow:—

"An article in a daily newspaper endeavours to show that Zeppelins have in the past raided England during any phase of the moon, and in winds designated as 'strong breezes.' A list of raids is given, together with the weather, the phase of the moon, &c. The list is, however, misleading as to important facts.

"For example (1), it instances the visit of April 29th, the day of a full moon. This raid actually occurred on April 30th in the early hours of the morning. The moon, which was about full, set at 3.57 a.m., and it was very low in the sky when the Zeppelin came. Moreover, the raid was a very trivial one.

"(2) The raid of May 10th which occurred during a strong breeze. This, again, was a hurried 'cut and run' visit, and it rather exhibited the raider's disabilities.

"(3) May 27th, in a strong breeze, and one day before full moon. As a matter of fact, the raid was on May 26th late at night. But the sky was overcast.

"(4) May 31st, three days after full moon. This raid occurred on the previous day, late at night. The moon, however, only rose at a late hour—10.44 p.m., so that the suggestion of bright moonlight is misleading.

"(5) June 6th, two days after last quarter—not a strong moon in any case. But the raid occurred late at night, and the moon rose after the Zeppelins had gone.

"(6) September 11th, two days after new moon. And it was a daylight moon, for the 'Queen of Night' rose at 8.4 a.m. and set at 6.39 p.m.

"The other raids were in calm weather and on moonless nights.

"It is really extraordinary that an article professing analytical care should go so far astray. We know that Zeppelins raid our coasts by daylight, and, admittedly, the raid of March 5th last during snow showers was a surprise. But the snow was local, and there is evidence that the raiders were handicapped by it severely. But why magnify the energy and powers of the enemy?"

## Lights during Zeppelin Raid.

At a Lincolnshire police court on Monday, an Austrian by birth, naturalised as a British subject, was fined £10 for displaying a light which might have served as a signal, guide, or landmark while Zeppelins were overhead.



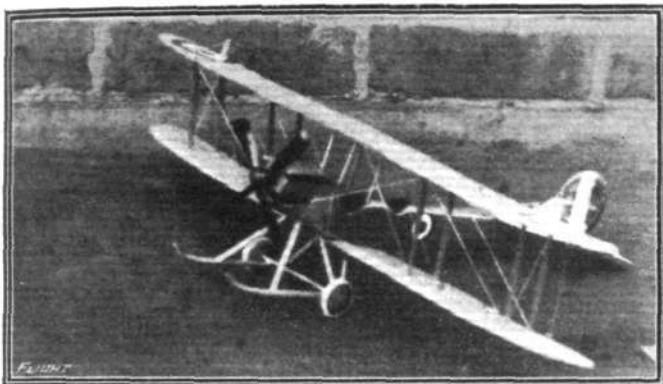
# Models

ALL communications in connection with this section should be addressed to the Model Editor, "FLIGHT," 44, St. Martin's Lane, London, W.C. Correspondents are requested to write on one side of the paper only.

## A "B.E." Type.

THE accompanying photo. is to hand from Mr. A. Terry Davis, who says:—

"I enclose herewith a photo. of a B.E. type model aeroplane I have constructed. The span of planes is 19 ins. The planes and tail are constructed of three-ply wood, the camber being obtained by planing, and then the spaces between ribs and spars cut out with a fret saw and the whole covered with tracing cloth (NOT paper),



Model aeroplane B.E. type, built by Mr. A. Terry Davis

coloured and varnished, and makes a good job, and when the fabric is stuck on is quite rigid and strong. I thought it might interest some of your readers, particularly those constructing small models."

## Scale Models v. Flying Sticks.

From Mr. Kingsley W. G. Pinney, whose excellent models have often been illustrated in these columns, we have received the following:—

"The articles in recent issues by 'Scale Model' and Mr. Balden are very interesting, and should greatly encourage those at present on scale work, and should also influence those about to take up this study.

"I do not quite agree with 'Scale Model' when he says it would be best to set beginners on scale work at the start. To my mind this seems too big a jump, and the resulting disappointments would thin the ranks of the workers to a minimum. On the other hand, it would be far worse to start them with flying sticks as Mr. Balden suggests. It is well known that many of the pioneers of aviation started their experiments with gliders. Therefore, why should not the beginner commence his studies by gaining a wide knowledge of the advantages and disadvantages of the dihedral angle, negative wing-tips, &c., by thorough and scientific study of the paper glider? If, however, the beginner finds it inconsistent with his dignity to stand on a chair and glide small paper models, surely the cause of model aviation will not be seriously troubled if he discontinues his efforts, owing to the fact that his first scale model fails to fly.

"In the model pages of 'FLIGHT' during the last six months I have noticed a great many photos. of scale models, all nicely made, and no doubt correct in minute detail, but not made to fly. These models, although they are very useful for exhibition purposes, are not doing much for scale model flying. It seems a great pity, therefore, that so much time and trouble should be expended on a model, which is very nice to look at yet is of no practical use.

"Before leaving this fascinating question I have a suggestion to



## Fatal Accidents.

It is with great regret that we have to record the fatal accident to Flight-Lieuts. Johnstone and Baumont, while flying on the east coast of Scotland on the 17th inst. Their biplane fell from a height of 100 feet, killing both occupants.

A fatal accident occurred on the same day at Hendon, Mr. John Ritchie Laidlaw, a pupil from New Zealand, apparently banking too steeply, resulting in his machine side-slipping from a height of

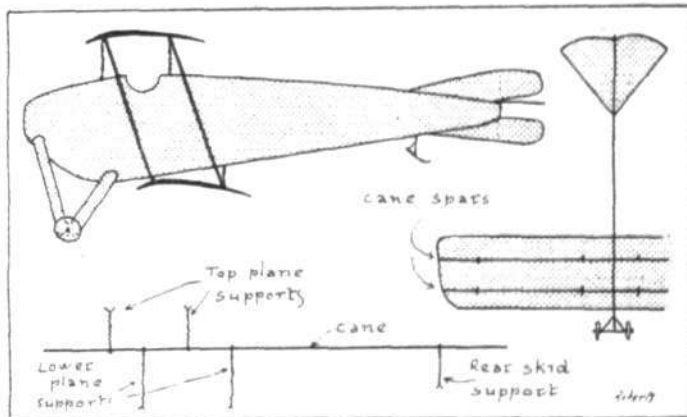
make to the Model Editor. Could he not see his way clear to publish articles which would be of great help to the scale modeller, such as a method of finding the correct position for the main plane of a tractor model, otherwise than by actual flying test, and other similar subjects which no doubt puzzle others besides myself?

"'Scale Model' has been good enough to suggest that I should give some information of the flying tests of my tractor biplane described in the issue of February 10th. This model has been out once, and a few moderate flights were obtained of about 10 seconds. These humble results were enough to show me that far more rubber will have to be fitted, and also that the tail area needs increasing. Although the model had several nasty landings on the wing tips, no damage was caused, probably owing to the all-steel construction of the wings. This also shows that a model, having some pretensions to scale outlines, can withstand hard knocks almost as well as a flying stick, provided that the construction is carefully attended to."

## An Instructive Glider.

In sending the attached drawing and description of a paper glider, Mr. Geo. H. Roberts says that he always makes such models to scale, and he finds that their great advantage is that they give the maximum tuition at a minimum expenditure:—

"The necessary materials are: Cartridge paper, florist's wire, and split cane. Mark out the shape of the body on the paper twice, cut out, and glue to the cane framework, as sketch. This is made from very thin cane or wood, to be obtained from Japanese ware, and cemented together with seccotine. The planes are also cut out from the cartridge paper, and strengthened by the addition of two spars of cane on the under side of the top plane and the upper side of the lower plane. The tail is also cut from the paper, and the fins are placed in position between the two halves of the body. To



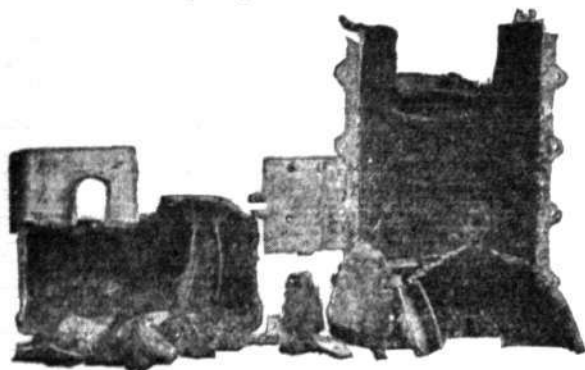
fix planes, securely seccotine the two body supports to the wing spars. Make the struts from florist's wire twisted together, using two or three lengths according to size of glider. To fix, push the two loose ends of strut through the plane, one on each side of spar, and twist together at the top; repeat for lower plane. The landing gear is made of V-shaped 'skids' and glued on each side of the body. The wheels can be made of thin card, and the axle of wire; also the back skid. The weight may be made of wax or plasticine; the latter, I find, much neater and workable."



250 feet. He was fatally injured, and at the inquest on Tuesday a verdict of "Accidental Death" was returned.

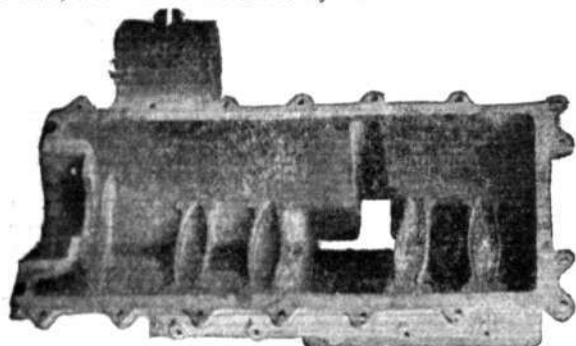
At the inquest on Mr. Matthew Muir, who was killed near Ilford, while flying with his son, Lieut. Kirkpatrick Muir, as recorded in our last issue, an R.F.C. corporal said that at a height of 400 feet the pilot appeared to have stalled his machine, which side-slipped and then nose-dived. It might have been an error of judgment, or it was possible the pilot was temporarily overcome by faintness. A verdict of "Accidental Death" was returned.

WE have previously dealt at length in these pages with the work done by the Barimar welding process, and the two photographs furnish another example of the saving of an expensive aluminium crankcase from the scrap heap. The crankcase illustrated was used



The crankcase broken into fifteen pieces.

in a 36 h.p. charabanc, doing duty in the Lake District, and was broken into fifteen pieces through the smashing of a connecting rod, one of the pistons passing clean through the casting. This repair was effected at an extremely moderate cost, and in a very short time, while as to its efficiency the owners of the charabanc



Made as good as new by the Barimar welding process.

state that it has proved highly satisfactory in every way. For the benefit of new readers it may be mentioned that Messrs. Barimar, Ltd., of 10, Poland Street, Oxford Street, London, W., have for a long time specialised in welding of all kinds, and those who require work of this nature done should make a point of consulting them.



## THE "APOLLO" AERO PLUG.

THE accompanying sketch shows the "Apollo" Aero Plug, marketed by Messrs. Brown Bros., Ltd., of Great Eastern Street, London, E.C., which has been giving very satisfactory results on Gnome engines. It has successfully passed the 30 hours test on engines of this make, which is somewhat of a record for ignition plugs. Having passed with equal success the Admiralty tests, it is now being adopted as a standard ignition plug for aeroplanes in the R.N.A.S.

The "Apollo" plug has a mica insulation, and the body is of steel, the base of which is formed in a deep "petticoat" for the purpose



The "Apollo" plug  
for aero engines.

of eliminating sooting-up, &c. The electrode is of nickel and is exceptionally stout, enabling it to withstand much hard usage.

Every "Apollo" plug is subjected to tests for leakage and sparking under pressure before leaving the works. The tests include 300 lbs. per sq. in. taken in water, and the sparking test of 20,000 volts under air pressure of 200 lbs. per sq. in. The list price of these plugs is 5s. Messrs. Brown Bros. inform us that they will be pleased to send a sample plug to any aircraft firm who are on the look-out for a really reliable and efficient high grade plug.

At the Active Service Exhibition.

THERE are one or two items which call for the special attention of those interested in the *Daily Mail* Active Service Exhibition, which is now open at the Princes Skating Club, Knightsbridge. One which never failed to attract was the stand on which was exhibited some model aeroplanes cleverly built by disabled Belgian soldiers from sycamore leaves, an acorn, shirt buttons, pins, beads, wire and pieces of tin.

Another stand where many relics of the war were to be seen was that of the Triplex Safety Glass Co., of 1, Albemarle Street, W. Many illustrations have appeared in these columns of the way in which Triplex goggles and wind screens have come through very bad smashes, but the exhibit provides an opportunity for visitors to see for themselves the great advantages of Triplex glass and the dangers of ordinary glass. In this connection, an important development is to be noted, as the company are now in a position to supply ordinary spectacles made on the Triplex principle.

Messrs. Burberry's stand is another centre of interest, and the various items of officers' clothing and kit displayed are seen to full advantage.

Information on Acetylene Welding.

IN view of the many firms who are now turning their attention to catering for the ever-increasing demand for Oxy-acetylene welding, note should be made of the fact that the Council of the British Acetylene and Welding Association have inaugurated a Consultative Department for the purpose of assisting in the elucidation of welding problems. The intention is to give expert advice and technical assistance where desired, and, one important point, gratuitously. All inquiries should be addressed to the Secretary, the British Acetylene and Welding Association, 103 and 104, Cheapside, London, E.C.

### Improvements at the Grahame-White Works.

THE mess rooms erected by The Grahame-White Aviation Co., Ltd., for their workpeople, equipped with all modern catering and other conveniences, were thrown open last week. The mess rooms will be under the exclusive management of the Y.M.C.A., who have also expended a considerable sum of money on the provision of a large recreation room for the use of the munition workers. That the arrangements made are appreciated by the staff is evident from the fact that the rooms are crowded daily for breakfast, dinner and tea. On the opening day addresses were delivered to the workers by Mrs. Winston Churchill, the Hon. Mrs. Henley, and Mr. Yapp, on behalf of the Y.M.C.A., and by Mr. Grahame-White and Mr. Payne, on behalf of the Grahame-White Aviation Co., Ltd. The proceedings were most enthusiastic, and cheers were heartily given for Mrs. Winston Churchill and her large and willing band of voluntary helpers.

### Refreshments at Hendon.

It is announced that with a view to assuring visitors to the London Aerodrome the greatest possible degree of comfort, the Grahame-White Aviation Co., Ltd., have themselves undertaken the management of the cafés in the enclosures. We understand that the Paddock café and bar were re-opened this week, after having been reconstructed and entirely redecorated on artistic and practical lines. Luncheons are served daily, and afternoon teas are a carefully-studied feature of the catering.

If you require anything pertaining to aviation, study "FLIGHT'S" Index to Advertisers and "FLIGHT'S" Buyers' Guide and Trade Directory, which appear alternately in these pages—one each week.

## FLIGHT.

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